COMPUTERWORLD

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Touch screens combat blue-collar PC phobia. Page 73. Pailure of Pan American

reservations systems oc-... blamed on software. Page 2. Zenith lesses executive who guided company into top tier of PC-compatible vendors.

DP sites drip-dry in Chicago

BY JEAN S. BOZMAN

vy rains that deluged the Chicago area 11 days ago dis-rounted dosens of MIS depart-ments and left five still operating in disaster recovery hot sites last

The rains dumped nine inches of water on the Chicago area in an eight-hour period beginning the evening of Aug. 13. By the the evening or Aug. 13. By the next morning, the worst fears were realized at A. M. Castle & Co. headquarters, where a ground floor computer room housing an IBM 4381 Group 2 and an IBM 4341 Group 12 ms

ne were covered by several The water was contaminated with sewer efficient, and all pow-er to the building west out. But data processing managers wait-ed before declaring a state of

During the record-breaking rainstorm, many other MIS op-erations faced power failures and water damage but managed to

h was estimated to have ed at least \$77 million in ident of Comd

and telephone service, at least 10 shops chose to issue an alert and notify disaster recovery ser-vices that they might need help.

Price shift rocks software arena

BY ROSEMARY HAMILTON

make an expression maintaine software vendors are moving rapidly to adopt graduated pricing structures that reflect the tiered pricing policy IBM amounced late last year. The revisions could bring reping changes to IBM maio-me shops, most of which have school software that was

ng to the operat Pour software companies — illinet Software, Inc., Applied its Research, Inc., On-Line stream International, Inc. and aftware AG of North America,

Inc. — plan to adopt graduated pricing schedules next month. In addition, Cincom Systems, Inc.

rest cost of mainframe software for products that run on IBM's onth. For exgan shipping last month. For ex-ample, ADR last week said 9370 uners will pay between 15% and 35% of the current software

bring price hikes to high end rs, particularly for IBM MVS

tions.
"You have got to be flexible
now," said Jeffrey P. Papows,
vice-president of marketing at
Cullinet. The trend is evident.
It presents as flingical compari-aon to charge more for a soft-ware ficense than what the hard-more courts in some cases. water costs in some cases

General Cinema Theaters, Inc. in Chestrut Hill, Mass., said be will not put purchasing plans on ile the software con

"if we were looking for some-thing from ADR, and we were ready for it, I wouldn't wait," Funce and, "But if they came out Continued on

CASE made for DB2 tool Host-based software integrates data dictionary

BY ALAN ALPER

NEW YORK - Eyeing two of sed CASE system wrapped around a data dictionary that the

vices in Bombay, India, can die more than 90% of all apn development life cycle ns. It will eventually be

ing environment and said it ap-Continued on page 102

CHAPTER TWO Play it again, MIS

BY KATHY CHIN LEONG

When Charles Oldenburg ad-dresses Decworld attendees at month on the issue of technology management, be will draw on his 35 years of experience in MIS at Chev-ron Corn. But Obsenburg will वह जो not go to Decworld repre

find it as easy to be over-worked in "semiretirement" ng reti nt age wi



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Quotable W hile it would seem some -29 Sun tests PC waters with high-end machine. 29 Wang exec says inteincluding, perhaps, gration is key to micro strateour competitors -

might like to see us sell McCormack & Dodge, I'm afraid I must disappoint them.

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Pan Am slices Sabre

Says American could not solve software woes

BY DAVID A. LUDLUM

effort to blend Pan American World Airways' reservation sys-tem into American Airlines' Sa-bre, a Pan Am executive said last

American and Pan Am recently said they were break off the 14-month-old agreeme The abrogation ended dis that led Pan Am to withhold pay-

ers and American to reso by filing a lawsuit. The chief problem arose in modifications for calculating in-ternational fares, according to Robert Mann, Pan Am'a vicepresident of marketing informa

Test runs produced exces sively high fares, which could scare off customers, and inaccurately low ones, which could eat up profits, he said. "The accuracy was not at all evident to us," Mann said. "It

was not even close to what our existing software could prove We could not function with the level of functionality American was going to provide."

American officials could not

With international flights ac ounting for about 70% of its ness, Pan Am must calcula international fares much more frequently than American whose business involves at ier

70% domestic flights. While Sabre is the most wide ly used airline reservation sys-tem, in "a large degree of cases"

it cannot calculate interna fares, which involve con

ditional routines, according When Sabre cannot calculate

an international fare, operators contact the principal airline in-volved by telephone or a Sabre data link, and employees of that carrier price the flight. Pan Am and most other inter-

tional carriers have adapted a system for pricing international flights developed by British Air-ways, Mann said. Penamac, Pan Am's reservation system, con tains a Panafare component that can calculate 90% to 95% of Pan Am fares, he added

Problems with adaptation Mann said he believes American had difficulty developing soft ware for pricing international ghts because it tried to do so by pting the current Sabre pric ing program, which is based on the Automated Tariff and Fare Determination System (ATFDS) developed by Eastern Airlines d is geared to domestic fare Pretty much around the

world, people are doing (interna-tional fares) the way British Airays does. Pretty much no one is sing ATFDS," Mann said. Testing of the Sabre m

While the pricing problem was "the deciding issue" in ending the agreement, American's slow development of a link between the sirlines' systems for control ling flight departures was also a factor. Mann said.

Illegal copying charged: 30,000 copies of DOS seized

BY ALAN J. RYAN

SAN FRANCISCO - A U.S. hal here seized 30,000 aluthorized copies of M's PC-DOS and evidence of the alleged illeged manufacture of Microsoft Corp. a MS-DOS 3.3 after conducting raids on a print-ing shop and a computer dealer

earlier this month.

Microsoft filed a copyright in-fringement action in the Federal trict Court for the North District of California July 29, after it discovered illegal copies of its product were entering the stream of commerce, according to Microsoft senior corporate at torney William Pope. The serzure order was authorized by Judge Samuel Conti, and the raids took place Aug. 3-6

The U.S. marshal and two in vestigators hired by Microsoft

sed the software, alleged ille gal copies of documentation and printing materials from KK Graphics Printing, located here, and its owner, Richard K. H. Lin. When contacted at home last

"manufacturing MS-DOS 3.3 and, according to their business records, they manufactured at least 10.000 least 10,000 copies," Pope said. He said 30,000 allegedly unau-thorized copies of PC-DOS in various stages of manufacture

An IBM spokesman said the company was assessing the reported seizures. According to Microsoft, Lin testified that the operating sys-tems software had been sold to

Julius Liu and Kathy Liu, the proprietors of Beltron Berkele iter storefront in El Cerrtto, Calif.



In the process of untangling departmental computing a lot of MIS Departments get caught. While they're busy figuring out and cleaning up each department's applications, requests for new ones keep coming in. Suddenly there's a backlog, And it's MIS's fault.

That's why organizations like Brigham Young University and the Deseret Medical Company have turned to ADR/IDEAL-ESCORT*

IDEAL-ESCORT gives Brigham

Young an effective tool for dealing with the PC applications backlog. As well as the waste of undisciplined applications.

That's because IDEAL_ESCORT is the only mainframe-class application development system for the PC. With a powerful 4th generation language modeled after mainframe IDEAL.*

Applications are documented better, understood easier and updated much quicker because IDEAL-ESCORT uses a highly structured language unavailable

in other PC-based systems.

And IDEAL-ESCORT assures everyone of information that is current and consistent now that MIS can give authorized users easy access to the university's

mainframe through their own PCs.
To learn how IDEAL-ESCORT can
unlock the potential of your PCs call
I-800-ADR-WARE.

ADR PERFORMANCE SOFTWARE. Unlock the potential.



tions to provide a terminal-to

rs like to have one terminal

n on the other ve

ing Avanti, now support IBM's

spanies' produ Most major T1 vendors, includ-

Everybody's doing it in the last few months.

TI ves ors have announced

Avanti to boost net management

Seeks to expand T1 sales with graphics, windows, multivendor connections

BY ELISABETH HORWITT

Avanti Communications Corn. is hox and then to the component expected next month to add two key missing ingredients to its network management offering: a centralized, graphics workstation-based system geared to the chaical end user and a conpection to other vendors' network management environ-

eld has learned syanti plans to announce the pen Network Management system (ONMS) at the 1987 Tele-Communications Associa-tion conference. The system was designed to centralize re-porting and diagnostic features that are currently distributed among Avanti T1 switches.

ased on a Sun Microsys-inc. Sun-3/110, the ONMS will provide color graph-ics, windowing, icons, network topology maps and other features designed to guide the inex-perienced user through identifyand solving network ems, according to Avanti

rector of marketing Charles

Comdisco customer Castle

was one of those shops. "We had

to run out and buy a pump," said Arthur Cybul, manager of DP

operations at Castle, which is located in the western suburb of Franklin Park, III. "Our uninter-

ruptible power supply system was flooded, and it didn't work.

but, fortunately, the only hard-

ware that was damaged were

company was fully insured for all hardware losses. Castle is a com-

pany that services metal parts,

tions in a Comdisco hot site.

lers for terminal In any case, Cybul said, the

Drip-dry

trouble spot, which appears col-or-coded on the screen, be can pected to include a version of a multivendor network manage-ment system — another area in which Avanti's competitors have room down first to the specific

oard that is causing the trouble. If Avanti had been able to offer ONMS last year, it would have had a better chance to win a T1

networking equipment contract from the state of New Jersey, ac-cording to Michel Guite, a Salomon Brothers, Inc. vice-presi nt who follows the The state organi

a blue collar worker could manage their networks, and that was the kind of operator they could get to run their systems at 3 a.m." The contract ultimately went to DCA. According to estimates by ston-based research firm The

Yankee Group, Avanti held 8% of the T1 equipment market last

ar. Avanti's introduction is expaid for the rights to use two hot sites in the event of a disaster, the third Chicago client, Castle,

was forced to fly to Comdi

Comdisco made it cle

that the hot sites filled up on a first-come first-served basis," Cybul said, "so we weren't sur-

prised. We knew they could ac-

up files, which were kept in an

off-site location in Illinois." Cvbul explained. "By Saturday night, when we flew the rest of

for us.

"At first, we flew two people out to New Jersey with our back-

Carlstadt, N.J., hot site.

PC as a co mat for sending network sierts to a data base. In May, DCA prom

ndor support through the Systems Interconnect standard. In June, Timeplex, Inc. announced it would provide low-level links between its Time/View system and other vendors' offerings and that it en active lately. Initially, Avanti said, the comalso planned to support some pany plans to announce its inten-

Next month, Motorola, Inc. haidiary Codex Corp. is exection between ONMS and selected vendors' network management systems. With the ted to announce a network management system with an section, an alarm condition pen, integrated architecture, he details of which have not een disclosed. Avanti will officially announce on a Paradyte Corp. system, for on a razacyne corp. system, sor example, will show up automati-cally in a window on Aranti's ONMS. "The real issue is that

not 10, to monitor network problems," Halquist said. but not which products it will ini-tially support, Halquist raid.

Other ONMS features to be introduced next month include Once the alarm condition is ntified, the user will be able to run diagnostics and other appli-cations, which will appear as one trouble ticketing and collection of network traffic statistics, such window on ONMS, as a terminal ridth usage and ind

ual port activity. Users will be ual port activity. Users will ashle to generate usage analysis reports using standard IBM Personal Computer programming language formats and mainframe-based programming languages, Avanti said.

ONMS will reportedly be strategies for interfacing their network management systems

approximately

the team to Newark, N.J., the hot-site personnel were waiting Road to ruin: Record rainfall th at closed off Kennedy Extress nay in Chicago also disrupted MIS operations At the hot site, Castle's appli

ister recov-

generating about \$300 million in cations, which had been runni cations, which had been running separately on the two IBM 4300s, were brought back up on a single-image IBM 3081. The was still being run from the hot site, but Custle executives reportedly planned to resume op-Cleaning up Meanwhile, Castle's DP staff of erations at corporate headquar-ters this week. Last weekend 3081 also regenerated the com 30 began to clean up, aided by dozens of other Castle employ-ees. Pumps were started Friday. pany's data base, written under Applied Data Research, Inc.'s Datacom/DB. The data base, was reserved for testing, which began Wednesday when the Franklin Park computers were Aug. 14, and a team of six work which tracks all inventory and ers prepared to resume opera movement of company

But when Castle manage-ment declared a disaster Satur-day, Aug. 15, Comdisco's Chica-It took eight hours to restore Castle's files to their predisaster condition. A full-blown IBM Sysgo-area hot sites were filled by other customers from flooded

Comdisco was able to accomnodate only two of its clients. both large IBM customers, at its three Chicago-area hot sites. Since one of the clients had premetals products. As of Friday, the nets

tems Network Architecture network was regenerated from New Jersey Sunday morning, reaching 27 sites across the country that distribute Castle's

wered up again. Also providing dis

ery services to Chicago-area businesses was Sungard Recov-ery Services, Inc., which is headrtered in Wayne, Pa. Sun gard's clients did not face wat damage, as Comdisco's had, but they did lack sufficient power and telephone service. One of them, a downtown financial services firm, only stayed at the hot site from Friday afternoon until 7 p.m. Saturday, Aug. 15

After several hours without wer, the financial firm flew its lata, backup tapes and staff to a northern suburban airport, "They couldn't drive from down-

town Chicago to our place," said John Rathiff, Sungard's vice-Comdisco's clients were not as lucky. All three had flooded

computer centers and will have to replace damaged equipment. "It will take some amount of time, probably several weeks, time, probably several weeks, before some of these users can get back into their flooded computer centers," Comdisco's Hipp said. "But they doo't want to move to our cold sites and set up shop there. They want to get back home, because that's COMPUTERWORLD

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In a recent Datapro survey our customers put us on something of a pedestal.

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experience is with our users who don't take full advantage of all the features."
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To tell the truth, we're even happier being put on systems than on pedestals.

SYNCSOPT

M&D builds on PC platform

First in application series works with mainframe accounting packages

BY CHARLES BABCOCK

CHICAGO - McCormack & Dodge Corp. unveiled last week the first of what it said will be a series of personal computer products that work with its mainframe accounting packages to provide distributed process-

addition, the Natick, Mass, based firm used its 10th annual users conference here to ace a new report writer. Viewprint, that can combine in-formation from multiple applica-

ns into one report. The first two PC applications, labeled the Satellite series, will be General Ledger, or GL:Satelite, and Accounts Psyshie, or AP-Satellite. M&D said both are currently in beta-site testing and will be available Oct. 1. They will will be available Oct. 1. They will be priced on a graduated basis, depending on the number of PCs that use the software at a site. Prices will range from \$12,500 to \$35,000 for GL'Satellite and \$17,500 to \$60,000 for AP-Sa-

A beta-test user of AP:Satellite, Bill Musner, accounts pay-able manager at Weyerhaeuser Co. in Tacoma, Wash., said his firm is using the software to write checks at the plant level that need to be issued the same day, a procedure that was formerly executed manually. eyerhaeuser'a accounts pay

tion, the 100 plants ma nframe during most of the day in order to be able to up date vendor accounts with which Weverhaeuser does business.

Musser's department incurs \$10,000 to \$12,000 in CICS rgebacks per week becau of its need for constant commu-nication with the host, a task that will be off-loaded to plant-level PCs through Satellite software. Now we will be able to load to the host in batch mode at night," saving 70% to 75% of

"We will probably purchase the Satellite series. We have to close our accounts every single day and do it under strict time constraints. The general ledger software would take the burden

off the mainframe and let us uti-lize our PCs," said Karen Bogom, a technical analyst with stnam Co. who viewed a dem-stration of GL-Satellite at the ers conference. Putnam is a seton-based mutual fund in-

street company The series sparked the interest of other conference attend-ees, including Guy McDaniel, vice-president and controller of vice-president and controller of Commercial Bankers Life Insur-ance, a medium-size insurance company in Irvine, Calif. He said Commercial Bankers and other subsidiaries of Fremont General inting products, and those nies will be able to process to in common ways through the complementary PC-base

products. M&D officials emp that the Satellite series will not

Instead, the series represents functions in comparable mainframe and minicomputer pack-ages that can be off-loaded to a PC, such as data entry and local data manipulation. When the tasks are completed at the PC, the data is intended to be uploaded into the larger system by M&D's PC Link

Formatting function In a similar vein, Kenneth Saw-yer, an M&D marketing manager, said, data can be down cr., was, gata can be nowalloaded from the mainframe on PC Link into the PC packages. While it would be possible to transfer data without the link, it performs a formatting function between

the two packages that would be difficult for an individual customer to duplicate. Sawyer said With the PC software, us can run reports and do calcula-tions, journal entries and other accounting functions while disconnected from the mainframe. When the local tasks are completed, the uploading is then sub-ject to the checks and controls of ject to the checks and controls of a batch process, Sawyer said. While on-line features may be-come part of the series in the fu-ture, Sawyer claimed M&D cus-tomers wanted batch processing capabilities first.

The Viewprint report writer, also introduced at the confersite introduced at the contence, is said to allow a user to as-semble data from multiple appli-cations and combine it in one report provided the applications are part of the Millennium fam-ily. M&D said programmers can use also facilities in Viewprint to create hooks into non-Millennium applications.

Viewprint is a detailed rewriter for comparing budget or actual actual expense state-ments and listing high-volume transactions rather than a manement information analysi ot, M&D's Michael Levinge

Scott Thomsson, a program-mer/analyst with Briggs & Strat-ton Corp. in Milwaukee, the only U.S. beta-test site of Viewprint, said the product "has an extract, sort and print methodology that allows you to do a report in one pass of the data base. Calcula-tions can be performed at the ex-

Levinger and Viewprint will eventually replace application-specific report writers in M&D producta. He acknowledged that speed of encustion might be a concern in the beta-test version. The logic to do cross-applica cts is quite com

Price shift FROM PAGE 1

with lower prices afterward, I'd renegotiate, jumping up and down, I'd do what I could to re-

up my dollars."
"If vendors are going to use "Il vendors are going to me this pricing to reduce the cost of entry-level systems, there's some benefit," said John Owens, executive vice-president and di-rector of electrosic data pro-cessing services at Shearson Lehama Brothers, Inc. But, be "If it increases prices for large shops, well, there's no ben-

Pricing policies Other vendors report that a tiered pricing policy is under re-

view. Pansophic Systems. Inc., for example, will probably mstatute new pricing within four to six months, according to David Eskra, chairman and chief execu-

Of nine software companies contacted by Computerworld last week, only one, Manage ment Science America, Inc. (MSA), said it had no plans to re-

vise its pricing strategy.
"Most of the ones that are doing it are systems software ven dors," said John Imisy, chairman of MSA. "They have to do it bewith IBM. We don't, with appli cation software However, Culinet has moved

to reprice in the applications tiered pricing policy "across the Tipping the scales nt rendom are adopting IBM's graduated pricing scheme

	ADR Datacom/DB	Solven AC	Cullinet IDMS/R
Presions	\$145,900 (M/VS) \$114,500 (VM or VSE)	\$176,000 (PM) \$142,000 (PM)	\$90,000 (4300 series) \$1,60,000 (3060,3090 series
Cross) 20°	\$17,175 (VM or VSE)	\$30,000 (1716)	
Group 20	\$51,065 (MVS) \$40,075 (VM or VSE)	\$150,000 (MA)	\$125,000
Cross) 30	Not assounced	\$170,000 (MVS) \$113,000 (VM)	\$135,000
Cressp 40	Not assounced	\$250,000 (MVS) (MV) 000,0013	\$180,000

board," sccording to Papows. The Westwood, Mass-based company will use a four-tiered structure for its data base prod-IBM method. IBM designated four grou

for its 370 series processors last year and now bases software pricing on processor group. The four segments begin with Group 10, made up of IBM's low-end mainframes, including small 9370s. The tier tops off with Group 40, which includes IBM's

3090 series mainframes. For its financial and manufacturing apolications. Cultinet said it will now a three-tiered system that is some

ilar to the IBM model but combines Groups 30 and 40 into one .. Applications software vendor McCormack & Dodge Corp. is on the fence regarding graduat-ed pricing. "I wouldn't say we're

planning to, but we're studying the hell out of it," said Robert Kelley, corporate vice-president of strategic marketing. "Obvi-ously, if Cultimet and MSA do it, we will have to do it At least two vends

menting graduated pricing in ases. ADR announced but week that it will provide 9370 icing in September that is sed on IBM's Group 10 and 20

rd to the graduated structure. Ciscoun, for example, has en selling software based on the number of users a syste will support. It said it will ret this structure and add the II four-tiered hardware structs en it rolls out its price list in

OF COLUM

pricing. ADR will follow next

year with additional tiers for

larger 370 series processors, ac-

cording to William Clifford.

ADR's executive vice-president.

On-Line Software said it will

also introduce 9370 pricing next

month. It has set up three 9370

price levels for its software prod-ucts that run under IBM's VM

operating system. In addition to

low- and high-end 9370 prices, it

has a separate price for IBM

The changes will probably

mean confusion to customers in

the upcoming months, as ven-

dors decide what will happen to

existing policies such as site li-

VM/XAusers.

The result will be that with the four groups there will be four different categories: unli users, up to 64 users, up to 32 rs and up to 16 users

Problem policies Other vendors have used site li-

censing policies, which became a problem with the 9370. ADR has traditionally sold software without regard to pro-cessor size, basing price on the operating system under which the software would run. With the old method, the company has a title licensing policy that allows customers to pay once for a soft ware program that would run on ole CPUs.

With its revised 9370 pri ADR will charge on a per-CPU basis for new customers or for current customers who will use a different operating system on the 9370 than the one they used on their other IBM mainframes. A VM shop that installs 9370s also running VM would be able to run ADR software on the

departmental systems at no extra cost, Clifford said. He said ADR has not yet decided how it will handle users who are currently under site licenses with larger processors.

Cullinet loses general ledger rights

BY CHARLES BABCOCK

WESTWOOD, Mass. - After ng a three-year court buttle h McCormack & Dodge p., Cultinet Software, Inc. last week it will internation ally market a general ledger product that is different from the hat is different fro rkets in the U.S. e it markets in the U.S. The Massachusetts S

Court ruled last week that Culet did not obtain the right to rket internationally a product icensed from M&D six years

Cullinet announced a year ago hat it had acquired an additional eneral ledger product, which it alls the Callinet International General Ledger System, from a

Not disclosing the name of the source was included in the s of the acquisition tion, Cull

ality to con

ou could take Softw nal, Inc.'s (now part of or Associates Interna-

CORRECTIONS

cross Corp. was not ac-ed by On-Line Software Inonal, Inc., although One acquired rights to several of it company's products. Forecross's name was minspelled in an article referring to some new

Digital Equipment Corp. cut the price of a 32M-byte VAX 8530 system from \$347,000 to \$342,000 (CW, Aug. 17).

Data General Corp.'s MV/7800 XP and MV/7800 DCX [CW, Aug. 17] use 256K-bit memory chips.

ted from the July 27 Sp light on graphics workstation were five products from Auto desk, Inc.: Autocad, a general drafting leling for m

Papows said. neral Electric Co., the for

mer owner of Software Interna-tional and a user of its Masterne Court decision will not upt any major change at Culpiece accounting software, uses scause the com mpany re-eting the several other general, ledg from mark act overseas until the the domestic and international markets will not lead to incomng entries for

omers, acuse both products and still con-

solidate worldwide accounts, Pa-

the \$1 milion-plus licensing agreement with M&D was that et was restricted to ma keting the product in the U.S. and Canada for five years, after which it could market the prod

M&D disputed that inter tation, and the two compa went to the Massachusetts Su ior Court in 1984.



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hard disk drive and control

strongly positioned for the home and education markets, a

becomes a viable low-end work-

station for stand-alone process-

within a corporate

Plus's 20M-byte bard-disk

obsests for Plus said that the shard disk, the Model 25

help of an upgrade lot.

Low-end PS/2 gets stepladder

Pair of hard disk drive intros from third parties add muscle to Model 25

BY JAMES A. MARTIN

ing that corporate MIS man agers will take some interest in IBM Personal System/2 del 25, two add-on product adors are offering hard disk drives for IBM's low-end microcomputer to expand that sys-tem's role beyond home and edu-

cation applications. ern Digital Corp. is expected to announce early next month the PS2520I, a 20M-byte hard disk drive lut that fits into the 3%-in, form factor slot unth the PS/2 Model 25'a microfloogy disk drive. The kit reportedly includes an internal controller board that absorbs

one of the Model 25's two expan-Western Digital, based in Ir vine, Calif., already announced the Fliecard PS-30, an add-in card with a 30M-byte hard disa drive and controller for the PS/2 Model 30. The Fliecard uses 116

Model 30 expansion slots and was physically too cumbersome to fit into the tightly packaged Model 25, according to Linda

ing or network terminal applica Plus Deve In addition ment Corp. said last week that its Hardcard 40, a 40M-byte hard disk drive and controller on one expansion board, is compati ble with the Model 25 as well as

ager of product marketin lowever, analysts and us

said they are not convinced that the Model 25, with or without a Hardcard 20, a 20M-byte hard disk, could compete against the Model 30 or IBM Personal board released in 1985, can be ed in both models with the

configured with a 20M-byte drive," said Hank Chesebrough,

Too many disadvantages' The Model 25 might be appro-riate for a tiny business that Viable workstation Although the Model 25 is

doesn't need to communicate with a mainframe, but otherwise, there are too many disad vantages in speed, upgrading op-tions and memory size," said Joe Cross, an analyst with Future omputing/Dutapro in Dallas.
Although the Model 25's \$1,350 retail price is considerahly less than the Model 30's \$2,295 tag, the Model 30 has rd "brings performance to Model 25 that exceeds [the formance of] the Model 30 been subject to deep discounting nost since its introduction. It can be purchased in some man

kets for slightly more than \$1,000 knd is, therefore, the better buy, according to Richard Shaffer, editor and publisher of 'Computer Letter,

rewaletter based in New York.

"As a dumb terminal of sorts or as a computer for PC training, when you don't need the expandability, the Model 25 should do OK in a business environment," said Richard Murphy, manager of Suntrust Benks, Inc.'s micro computer division in Orlando . "Otherwise, even with a rd disk, I don't think it would

ally serve a strong purpose." The Western Digital hard disk drive kit is set to begin ship-ping Sept. 4. Pricing has not The Hardcard 20 upgrade kit costs \$50 to users who pur-chased the board before Aug 1 and is free to those who purchased it after that date, the

company said

Lockheed puts factory under Ethernet umbrella

BY KATHY CHIN LEONG

SUNNYVALE, Calf. - Lockheed Missiles & Space Co. last week unveiled its Automated ce: that the co Center for Electronics (ACE), a \$41 milion manufacturing site that integrates more than 200 computerized devices under one baseband Ethernet network. works are less flexible for long

The company chose not to use the much-touted Manufac-Automation Protocol (MAP) for its networking standard. Bob Fitzpatrick, chief systems engineer for ACE, said the company preferred to remain with Ethernet since Lockheed was already using Decnet, Digi-tal Equipment Corp. a version of Ethernet, in the engineering "By the time we started ng out the details for the facility. MAP was not fully ma-We already had an installed Ethernet, and it wouldn't make sense to change," Fitzostric

That practical approach ma also be the most prosperous for Lockheed. Anthony Fracia, president of Advanced Minufac-turing Research, a Salem, Mass.-based consulting firm, noted that too many companies are concerned with using the latest and most popular technologies before planning exactly what they want to accomp He said successfully man tion process is the key to manufacturing success.

ing horns sue of MAP vs. Decnet has

been a topic of contention for the past several months, with DEC sident Ken Olsen publicly de-ng users groups' efforts to set standards and the decision by MAP proponents not to consider Decnet's medium as an alternative to MAP-endorsed broad-

band. MAP enthusiasts, led by DEC customer General Motors orp., have long argued that used access scheme will hop down the network as traffic in creases since data collisions will increase; and that baseband net-

tion of using video or voice on the factory floor network. "We looked at all the options and com-pleted many feasibility studies." trick said. "Decreet is sufficient to meet all our needs for now and the future. years, the 231,000-so-ft facility will be the first to offer end-to-

prices. In fact, Lockheed alres

has a space cust the ACE site. Experts monitoring the man ing con

ket are lauding Lockheed's plan.
"I would out them in the unner 1% among American manu turers," France

to bid for contracts at lower

have tried to do this and failed What is important is to show that this works It doesn't matter if they are the first or second or third There are just success stories out there."

The creati of the new site stemmed from the company's realisation that state-of-the-art

aircraft and mi les were in creaningly reliant on computer-ized and electronic controls. In addition, the company said it ex-pects sales of electronic compo-nents and related software to e up half of its revenue in

With those reasons in mind Wolnowsky said the strategi need for a networked facility with a full complement of hard-ware and internally developed software was critical. Prior to this, engineers is various groups were using computers with a va-riety of protocols, Wolnowsky explained. "Specifications were ed manually from group to sup, and redundant key entry

Although the ACE site is pro ducing boards at a faster rate Lockheed's Space Systems Divi-sion, stressed that the focus will be on quality production. "The goal is not high-volume produc-tion." be said. "We want to enire [that] each customer gets stom electronic components om our division By February 1988, the adja cent facility, called the Micro Electronic Center, is scheduled to be completed for the develop-ment of very large-scale integra-tion circuits, Wolnowsky said.

dinouru Araki, preside

Leading a tour of the facility, ACE officials outlined the manufacturing process from start to In the Lockheed Electronics Analysis and Design System

area, engineers are creating the initial specifications on 100 Sun Microsystems, Inc. worksta-tions linked to one DEC VAXtions insten to one DEL VILL-11/785. From there, specifica-tions are sest to Cadam, Inc. Spectra Graphics workstations in the computer-aided design area for another set of engineers to create board layouts.

A business systems network of IBM mainframes is interfaced to the Ethernet network, giving the assembly line shop orde and production duties. Finally, the boards go from the computer to actual production in the as-sembly area, where rows of rootic arms stuff the boards with

rding to Wolsowsky, rebility is improved since users at any point on the network can check the original board design to make sure the product has not ifications. At every turn the process, the system software makes a series of quality checks. So exacting is the process that the company inter bypase building prot prototype bypase building prototype boards and go directly into final

ACE on the floor locked to the following and a society of desices in a factory environment oper DEC's persion of Etha

CP CHAT

distances and cannot support a mixture of voice, data and vadeo, But Lockbeed's Fitzer

sed that his team of spealists has already tackled those Heavy, shielded bas band cable has been installed in the noisest areas of the site. To lessen the volume of data collision on the network engineers save worked with DEC to partition the network into "sui

works," be said.

And, while broodband can support single network lengths of up to 25 miles and baseband cannot, Fitzpatrick said that does not matter. Lockbeed's Ethernet network will be limited to the ACE and an adjacent Lock-The company has no inten-

faction of printed-circuit boards for military defense sys-tems, Lockheed officials said. According to Howard Wol-nowsky, director of Lockheed's data exploitation programs, these boards will be made in a sign to the final assem

cker and cheaper onal in Seo tember, the site will be able to produce boards faster, cheaper and with higher reliability, Wolrsky said. A 15- by 15-in. circuit board that would have taken eight hours to produce will now take seven minutes, be said. The same board will also cost the

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Speeded up Word adds macro ability

BY ALAN J. RYAN

for applications marketing.

This latest version features increased speed, the ability to use macro commands and docu-REDMOND, Wash. - Micro soft Corp. is scheduled to an ment management and retrieval nounce today an upgraded Mi-crosoft Word software program Document retrieval is a total drop-dead secretarial requireand said last week it expects the Levin said. Other changes to increase the compaiges have been made as well

ny's penetration into large and Word 4.0 is targeted mainly at secretaries, managers and at-torneys, according to Lewis Lev-

NEED TO WRITE

many at the request of users. To reach the target audience, Levin said, "we needed to make ents for peop who wanted to do word process in. Microsoft's product manager

to see what features they want-ed and needed most. Included in the improvements is a stres ed uper interface to make the ct more intuitive. "That was in response to some criti-cism we'd gotten," especially

day's lesson

Other changes are an integrated on-line Help tutorial that preents a lesson on the topic in use without leaving the document and a "red-lining" feature for highlighting changes to copy or adding comments while leaving the original intact if the author

es not to incorn he cursor in Microsoft Word 4.0 reportedly moves 90% faster than in previous versions, but it can be slowed down if the user

does not desire the speed. Word 4.0 is scheduled to ship ext month and to retail for \$450 for new users. Those who

surchased Version 3.1 after July will get the upgrade free of to July 1 can be upgraded for

The networked version is exected out about six weeks after he first shipments of Word 4.0. For \$750, the user will get Master Pack, which supports IBM's Token-Ring network and IBM's Token-Ring network and PC Network, AT&T's Starlan; Ungermann-Bass, Inc.'s Net/

One; Novell, Inc.'s Advanced Netware and 3Com Corp.'s 3+ and Ether series as well as any

For each additional user, the fee is \$150, which includes the mentation and a license to get into the server copy.

most already holds a substantial share of the \$42 million PC



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Enmasse resurrected, to buy Point 4 Data is being paid a fee by Enmasse in vestors for his services.

BY STANLEY GIBSON TIISTIN Calif - Print 4 Data Corp. recently announced that it has received an offer to be acquired by Enmasse Computer Corp. for \$18.7 million.

ry Point 4 with the remaining masse technology in the belief that Point 4 will attain the marketing success that eluded En-According to former En-masse President Robert Gard-

Enmasse, formerly located in Acton, Mass., ceased operations early this year. However, its inner, Enmasse's investors denied the company \$5 million in February, causing the young firm to shut down. Enmasse's investors include Oak Investment Part-ners in Westport, Conn., which is also an investor in Point 4.

Enmasse produced a Unix based transaction processing

in selling to large corporations o to value-added resellers (VAR). The company claimed its system could be expanded by adding tightly and loosely coupled units to a maximum size that could dle 2,500 users and provide

One-man gang The current president and sole employee of Enmasse is Robert er, who is also president of Technology Service Group, Inc. in Melbourne, Fla. Enmasse has sold all of its hardware. Baker said, and retains only its software and hardware specifica-tions. Baker said he was retained as a consultant by Oak Invest-ment to explore how to best turn

a profit from Enmasse's technol mone is also an is vestor in Technology Service. Baker said Technology Service

Enmasse has neither d Enmasse has neither occured benkruptcy nor paid off all its creditors, Baker said. The com-pany hopes to gain revenue from its relationship with Point 4 in order to pay off its debts, al-though Enmasse's creditors have not yet been informed of the proposed merger, Baker

After the proposed transac-tion, William Rigby, Point 4 president and chief executive officer, will become president of

nasse, which will act as a Rigby will remain president and CEO of Point 4.

Under the plan, Point 4 said it will become a wholly owned subsidary of Enmasse and will retain its name management products and policies. Point 4 nagement and its board of dimending acceptance of the Enmanse offer to Point 4 shareholders, accord to a prepared state by Point 4.

"We are going to look at the [Enmasse] technology and re-package it for a profitable mar-ket," Rigby said, although he declined to say in what form be would put the technology or to which market be would try to sell it. "We won't market the En-masse product right away," be added. Point 4 licenses the Iris erating system and sells trans

action processing systems to VARs of small and medium-size



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HP, Tandy, Ashton-Tate pick up steam

BY CLINTON WILDER and STEPHEN JONES

strength in several sectors last week as strength in several sectors alse were solid quarterly enumps growth was re-ported by Hewlett-Packard Co., Tandy Corp. and Ashton-Tate. But Gullinet Soft-ware, Inc., still in a transitional phase, re-ported its fifth artigith quarterly loss. Ashton-Tate posted strong revenue and earnings growth despite speculation that competition from IDM, which will re-

Extended Edition, would leave Ashton-Tate's popular Dease III out in the cold. Users apparently were not scared off by the pending IBM announcement. Dease III sales accounted for about \$4.11 million of Ashton-Tate's \$63.6 million in revenue for the second quarter ended July

Maxed rescrion

Net income rose 55% from the corresponding quarter last year, from \$6.5 milion to \$10 milion, or 40 cents per share.

Revenue was up 30% from the \$49 mil-

Bruce Johnston, an analyst with Pirst Boston Corp. in New York, said Ashton-Tate came in at about \$3 million less than his prediction of \$67 million for secondeter revenue. He attributed the k

ne attributed the lower number to fa-ies for Ashton-Tate's Multimate up ades. Instead of taking off, Johnsto id, sales from word processing pack as grew by only about \$400,000, from

HP reported one of its better growth surters in recent years. The Palo Alto alif-based minicomputer and acientifi-struments maker said third-quarter

are. Revenue was up 14% to \$2 bill HP President and Chief Executive HP Pressent and Chief Executive con-cer John Young said in a prepared state-ment that the firm's order backlog rose by \$200 million during the quarter. He said the company's fourth-quarter goal is to convert that backlog into shipments.

Ups and downs Westwood, Mass.-be ed a loss of \$8 mili loss of \$8 million, or 25 cents per re, nearly double its \$4.4 million oper ating loss in the year-earlier quarter. But sales jumped 48% to \$49 million, com-pared with \$33.2 million in the first fiscal er a year ago.

Cullinet lost a total of \$11.4 million. 36 cents per share, in the compar quarter of 1986, but that figure include

quarter of 1980, but can appa.

Although Callinet's sales reached a record high for the first quarter, Scott Smith, an analyse with Donaldon, Luftin & Jenrette, attributed them to revenue from software maintenance rather than the sale of the sale duct licenses. He said m enue grew by 65% to surpa om licenses, a highly unusual situation

for Callinet.

"It's a difficult time for Callinet, as they try to introduce many new products and cut expenses," Smith said. "They will have difficulty atimulating any growth in the mainframe data base market." He estimated that Callinet will remain in the

tonated that Custmet wa remain in the red for at least two more quarters. Like other leading microcomputer suppliers such as Compaq Computer Corp. and Apple, Tandy reported strong quarterly and year-end financial results. In the quarter ended June 30, profits rose 66% to \$44.4 million, or 49 cents per hare, on a modest revenue gain of 7% to

For the year, the Fort Worth, Te based firm said its profits increased by 23% to \$242.3 million and that sales grew

PS/2 to get 31/2-in. HAL

CAMBRIDGE, Mass. — Lotus Develop-ment Corp., last week announced it will immediately begin shipping a 3½-in. ver-sion of its Human Access Language (HAL) for the IBM Personal System/2. HAL is a collection of shortcuts from Lotus a 1-2-3 program that makes it easier to perform tasks such as entering formulas, formatting worksheets, moving and copying data, extracting data, crea ing graphs and sorting data bases, according to Lotus.

The product takes advantage of the stures of Microsoft Corp.'s MS- and IBM's PC-DOS 3.3, new data storage de-vices and the video displays of the IBM PS/2, Lotus claimed.

Registered users of the 5%-in. disk version of HAL will be allowed to migrate to the 3%-in. version. That program re-portedly will begin in the fourth quarter and carry a \$30 f HAL sells for \$150.



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Zenith Data president leaves for start-up

BY CLINTON WILDER

GLENVIEW, III. — Zenith Data Systems President Robert Dilworth, who guided the firm to its status as one of the top three IBM Personal Computer-compativendors, resigned la con Valley start-up.

Dilworth will become s Metricom, Inc., a Cupertino, Calif.-based firm that is developing remote meter-

firm that is developing remove measur-reacting and control systems technology for the electric utility industry. His new position will take effect Sept. 1. Named to replace Disworth at Zenith was John Frank, 48, Zenith'a senior viceident of sales and marketing. Frank of Zenith in 1981 from a sales position Management Assistance, Inc. Frank said Dilworth's departure was

First Financial to pay \$65M for Endata

ATLANTA - First Financial M. ment Corp., a leading data processing ser-vice bureau for banks and thrift institutions, last week announced its into acquire Endata, Inc. for approx

\$65 milion in cash and stock.

First Financial Management is a maj
customer of Endata, a Nashville-bas ers data stored on computer disks and tapes onto microfiche. Endata has an annual revenue of approxi-mately \$40 million, and First Financial ment does about \$110 million in The buy-out closely mirrors one ma

artier this year by a major First Financial ent competitor, MTech Corp. according to Cato Carpenter, an analyst with Baltimore-based Alex Brown & Sons, Inc.

Dallas-based MTech purchased Kai-var, Inc., which supplied microfiche ser-vices in two of MTech's 20 data centers. After finalizing the acquisition, MTech is to expand the Kalvar service to all of

"My hunch is that First Finan that deal and saw that it made sense.

anks and financial institutions are reired to keep customer account rec and other data on microfiche for varying periods of time. First Financial operates periods of time. First Financial of 36 DP centers accessing 87 main for approximately 1,000 customers.

After completion of the merger, En-

data Chairman and Chief Executive Officer Douglas C. Altenbern, a former chair man of ADAPSO, will become viceman of First Financial Manag

The final price of the acquisition will be between \$60.6 million and \$73.6 million. pending on the average First Fir Management stock price in a specified pe-riod. First Financial will fund 20% of the buy-out in cash and 80% in newly issu es. The transaction is expect detect in October

Dilworth leaves for Metricom; Senior VP Frank named replacement

not a surprise and that its timing was not related to Zenith's recent winning of a \$104.5 million contract to supply laptop computers to the Pentagon [CW, Aug.

es about it.

Frank said. "This was the kind of opportu-nity be has been looking for. We expect a te speaker at Comdex/Sorine orth is a California native who

during his two years at Zenith, according to Metricom Chairman Paul Barron. Me tricom, incorporated in December 1985.

is a venture capital-back ing 22 peo

tional change for Dilworth, who jo nith from Morrow Designs. Inc. that licensed its port

chaology to Zenith.

A wholly owned sub ary of Zenith submidiary of mith Deta Syst Electronics, Inc., Ze

ng at a 100% rate this y

Zenith made its name selling IBM PC mostibles to the federal government

It won several high-priced govern-nt contracts during Dilworth's tenure, luding the 1986 Internal Revenue Serup bid and the recent \$104.5 miln pact for 90,000 lantons for the arm

se Metricom is not in the com-siness directly, Dilworth will be sbie as a Zenith cons d of the year.

Art Lambert, f ni sales di



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Pageperfect sets final October delivery goal

BY STEPHEN JONES

SAN RAFAEL, Calif. - After almost one package with a fully integrated word pro-

be the first product to merge desktop publishing, full-function word processing year of delays, international Microcom-puter Software, Inc. last week said it will Unlike the spate of economy-minded start shipping a \$495 desktop publishing packages released recently for the low

ware and a large amount of memory.

Jil Lifschiz, manager of marketing for
the software publishing house, said the
hybrid product will be released no later

in the second week in October. The package was designed to run on sachines based on Intel Corp.'s 80286 and 80386 microprocessors and needs 640K bytes of random-access memory. It also uses IBM's Enhanced Graphics

Adapter.
Those requirements put Pageperfect in the middle of today's dealtop publishing spectrum — between Software Publishing Corp.'s \$249 PPS-Professional Write Plus and Xerox Corp.'s \$895 Veo

Eveding deaktop publishing fray But International Microcomputer Presi-dent Richard Borenstein said the product will not be positioned as a traditional desk-top publishing product. Instead, be said, the firm will promote the product as an easy-to-use word processing package that can dress up standard business communications such as letters, memos, news re-

eases and reports. Pageperfect feat res a file man ragepertect reatures a tile manage-ment operating shell that is said to enable the user to move through document cretion, graphics integration, layout and rinting without exiting the program. The package allows users to enter and

different view levels with what-yo is what-you-get capabilities. It is bund with a high-performance graphics of called Desktop Publisher's Graphics. "It's not the ultimate desktop publi

It's not the ultimate dealtop publish-ing program, but it has good typesetting functionality, nice built-in graphics, and it's very easy to use," said Peter Dyson, editor of "The Seybold Report on Dealt-top Publishing," who saw a demonstra-tion of Papenerfur less avoid.

on of Pageporfect last spring.

The package automatically accepts files from other word processing pack-ages, such as Micropro International Corp.'s Wordstar and Aubton-Tate's Mul-timate, and it features a spell checker and

First scheduled for release in Novem-er 1986, Pageperfect has hit a number of evelopment obstacles, and early runs of e product might still contain some bugs.

Borenstein said the initial version of ageperfect will not be compatible with Pageperfect will not be compatible with Adobe Systems, Inc. 'a Postacript and that its output capabilities will then be limited to laser printers from Hewlett-Packard Co. and Canon U.S.A., Inc. Borenstein, however, emphasized that Postacript compatibility will be available by January. But that concerns industry watchers this Passen, who said lack of interaction

like Dyson, who said lack of integration with standard products could make Page-perfect little more than a niche offering. "If Pageperfect is going to be per-ceived as a desictop publishing solution, then [International Microcomputer] is going to have to come out with a Postscript driver at some point," Dyson said.

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Saries and the PC for

Amdahl makes first super sale

Three-year wait ends as oil-search firm buys vector processor

BY JEFFRY BEELER

HOUSTON - For Amdahl Corp., the long wait has ended at last. Nearly three years after the company entered the su-percomputer field with considerable fan-fare, a domestic user has finally agreed to buy one of Amdahl's four models of IBM-

compatible vector processors.

The first U.S. customer of an Aundahl
supercomputer is GECO Geophysical Co.,
the U.S. diffiliate of Geophysical Co. in
Norway. GECO said it plans to use its
Model 1100 number cruncher, which it
installed Mug. 8-9, to said its clients in the
search for untapped deposits of crude of
Installation of the Model 1100 at the

ctor's U.S. processing center here came more than 34 months after the ma chine and a companion system, the Mode 1200, were introduced at Amdahl'a Sun nyvale, Calif., headquarters in Septem 1984. Since then, the IBM-compar nframe vendor has announced two adnow ranges in performance from 143 mil-tion to 1.14 billion floating-point opera-tions per second (FLOPS).

Importing success
At the same time, Amdahl and its We many-based business partner, Sic-is AG, together installed a total of 10 of Andahl's vector processors at various customer sites in Europe. But it was not until the 267-MFLOPS Model 1100 — which corresponds with Fustus Ltd.'s VP 100 supercomputer — replaced GECO's existing Amdahl 5860 that Amdahl began to duplicate its European sales success in the U.S. The vendor attributed the delay in domestic sales to a fundamental difference between the American and Europe-

upercomputer markets.
The U.S. vector processing arena was extremely hard for us to crack, because it's Cray's home turf, the place where they're most deeply entrenched," said Wayne McIntyre, Amdahi's director of scientific systems. "In Europe, where o one dominant vendor is some-iker, the market is a bit more of a loyalty to one dom

Another reason the company's super-computer line remained unpopular in the U.S. for so long has to do with an admitted U.S. tor so tong nast to do with an admitted lack of clarity in its initial marketing ef-forts. "When we started, we adopted a bit of a shotgan approach, and it took us a while to figure out which applications our vector processors are best suited to," an Amdahl spokesman said.

The firm identified the petroleum and stric services industry as a business op-

portunity that "fits our supercomputers to a tee," McIntyre said. "What almost every player in that sector has in conis a lot of experience in scientific computing and a nearly complete dedication to IBM 370-style mainframes."

"As a geophysical contractor, we ac-ire and process seismic data for oil com-nies, both large and small," said Randali Odom, GECO's vice-president of data ocessing, "Through an air gun or some her device, we shoot energy into the

ner terrace, we make signals the un-riying layers of rock send back to us."

By sampling the returning energy trees every 2 mases for 8 to 15 seconds. systems can record a series of "wigtraces" that indicate precisely how the earth is structured at a particular point beneath its surface. They can then interpret the highly technical data to de-rive whether the section of rock in ques-

tion looks promising enough to warrant exploratory drilling for oil. Although the procedure sounds sim-le, it demands far more computation ower to eliminate extraneous noises and otherwise process the incoming seismic data than GECO's existing combination of an Amdahl 5860 and three 470V/8s can

So about two years ago, the contrac-tor's parent company in Stavanger, Nor-way, benchmarked three systems as po-

mainframe. The test suspects assumed Model 1100, a Cray Research, Inc. super-computer and an IBM 3090 with a vector

Cray didn't do it for GECO Although the Cray machine took top hon-ors from the standpoint of sheer speed, it proved unsuitable for GECO's applica-

"It lacked a sufficient amount of main memory to handle and mar the long records we have to deal with when we process our seismic data."

Odom said.

Moreover, the IBM candidate proved more expensive than the Model 1100 when the price of the 3090's wester processor attachment was figured into the overall cost equation, he added 50 by a process of elimination, GECO's parent organization optical eventually for the Armadial alternative, which holds up to 256M

ytes of internal storage and is currently infigured with 128M bytes. Like GECO, most large oil companies and geophysical contractors run lots of Fortran code which, if vectorized and recompiled, can be readily transported from the scalar mainframes where they cur-rently reside to IBM-compatible super-

uters such as Amdahi's. the petroleum industry as a prime market than the price of crude oil plunged to near-ly \$10 per barrel. The decline put oil com-panies in a severe financial bind and forced set of them to slash their spending for research and development, including su-

DEC flak grounds Air Force contract

MAYNARD, Mass. — The U.S. Air Force last week said it will suspend bidding on a \$3.5 billion computer contract protested by Digital Equipment Corp. According to Frank Donovan, DEC government systems group spokesman, his firm contends that the contract unfair.

ly restricts competition because the Air Force contract requirements for 20,000 computer systems "requires operating systems that conform to AT&T's prop etary System V Interface Definition as measured by AT&T's proprietary System V Verification Suite

Joining DEC's protest list week was Wang Laboratories, Inc., Donovan said. The formal complaint was filed by DEC Aug. 12; hearings were held list week on DEC's request to suspend the procure-ment until after the formal complaint has m heard, which will likely take up to 45

"We have no reason to believe the judge will not rule in our favor because the Air Force acquiesced" and suspended the bidding, Donovan said.

He added that while DEC is pleas with the suspension of the procurement because it gives the company more time to prove its case, "It's not by any mes conclusive of anything. The protest has yet to be heard." A hearing is slated for Sept. 16 in Washington.

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EDITORIAL

See the light

couple of years ago, a consultant rather irreverently said we'll see the paperless office of the future at about the same time we see the paperless bathroom. Clearly, that individual did not foresee the real

future of data storage, and that future belongs to optical disks. As our Executive Report, beginning on page

55, demonstrates, optical storage, recently just a gleam in the eyes of visionaries, is inching closer to reality, driven inexorably by two forces. One is the explosive growth in storage needs. The other is the tremendous market potential in optical storage for the vendor community.

Optical storage represents a quantum technological leap compared with conventional magnetic storage. As the report notes, existing compact disk/read-only memory technology allows the distribution of the equivalent of 175,000 pages of ASCII text, plus indices, to a user with a microcomputer and a \$700 drive. Along with recent developments in superconductors, optical storage is one of the few authentic gee-whiz technologies today.

Personal computer managers are not the only ones excited about this technology. Conventional MIS pros are licking their chops over the potential resident in erasable optical disks, which are still in developmental stages. In compute-intensive industries, the amount of valuable office space occupied by large-scale direct-access storage devices can be literally measured in acres. A single erasable optical drive will replace dozens of today's large-scale DASDs. Skeptics say that erasable optical media is nearly a decade away. But these skeptics overlook the mighty efforts being made both abroad, by Matsushita Electric Industrial Co. in Japan and Philips N.V. in the Netherlands, and in the U.S., by Eastman Kodak Co., IBM and others, that will bring such products to market within five years - perhaps sooner — at affordable prices.

As optical disk technology blossoms, several critical issues will need to be addressed. What will be, and what should be, the role of MIS in implementing optical systems?

As one pioneering optical user notes in the report, this is a sizable political problem. The technology is so new that people don't readily have a handle on whether it is a data processing, department or end-user system and whether it can manipulate or just store data. Users are reluctant to let procurement get bogged down in the MIS acquisition process.

There are also critical standards issues with which the vendor community is wrestling. Any unnecessary delays in setting standards will certainly delay acceptance of the technology, because users have been burned by nonstandard technologies more than once in the past.

Pending the resolution of industry standards issues, optical technology will dominate storage in the next decade. As optical consultant Ed Rothchild says in the report, all the pieces are in place to turn optical technology into an essential



LETTERS TO THE EDITOR

sions will be drawn by the other-

system, and the Federal Bureau

of Investigation was multing it

That is not the case. The

board, composed of criminal jus-

tice administrators, is an adviso

ment. The purpose of their

recent meeting was to review

concepts developed by extensive

This week

in history

A U.S. Department of Com-

merce report urges President

Jimmy Carter to create a na-

tional information policy be-

cause 46% of the U.S. gross

national product is derived from producing, processing

and distributing information, and half the labor force is en-

The Internal Revenue Ser-

vice begins using its comput-

er system to help enforce mil-

itary draft registration despite feelings from con-

and the agency itself that the plan may be illegal.

smen, privacy advocate

Aug. 22, 1977

lug. 23, 1982

ry to the FBI on NCIC mana

wise uninformed reader.

expand its criminal info

Not in our lifetime Still preliminary I read "FBI info system e

I enjoyed Charles P. Lecht's column on the Japanese data entry predicament [CW, June 22], but I strongly disagree with his initial premise and conclusions.

He said that voice input will eful first in Japan, par ing lightly over the problems of ect and inflection. He did not tell us that each Kenji ideogram has three or four pronunciation and may be written or printed in five styles. And he did not remind us of the importance of for-mality in the Japanese social

Throughout the article, Lecht implied that voice input in bosnese is on the verge of success. He then closed by inferring that voice input for English must fore soon follow.

But the problem is entirely different. In Japan, the challenge is to get an ideogram into the computer by any means, from weird 3,000-key keyboards to expert systems acreeoing Kanii options from phonetic-symbol

In the West, we already have great keyboarding. We can produce a handsome business letter. We can enter computer data fairly cheaply. Verification and error rection are straightforward The problem is to do better with

Even if the Japanese succeed in eliminating keyboarding, which I do not believe will happen in any CW reader's lifetim and even if here in the West we use voice recognition techniques to help paraplegics and to benefit senior executives, it emphatical ly does not follow that typing an key data entry will be supersed

Herb Greack

interviews of the criminal igs community on what interstate information requirements, if provided by NCIC, would subsion assailed" [CW, July 6] and believe that incorrect cond stantially enhance the effective-ness of the criminal justice com-

The major premise of the ar cle was that the National Crim The significance of the rec ons is that suff Information Center (NCIC) Ad-visory Policy Board has made need has been demonstrated by the NCIC user community for fations on a plan to

certain proposals, and they should be studied further. No final board recommends tions will be made until extensive review is made of societal impacts, civil liberty concerns, architectural design considerations, fiscal considerations and other related issues. No plan growth for the NCIC 2000 sys-

tem exists nor is the FBI consid ering such a plan at this time It is important to point out that the NCIC 2000 study was funded by Congress after oversight hearings addressed the scope of the study. The FBI has and continues to manage NCIC responsibly with primary sensi tivity to civil liberty interests.

All current NCIC files have extensive security and privacy protection, including restrictive criteria on when information can be entered and limitations on racies and individuals aut rized to access the information. Milt Ablerich

Acting Assistant Director Office of Congressional and Public Affairs U.S. Department of fustice Washington, D.C.

Computerworld welcomes com-ments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberts, Editor, Con terworld, P.O. Box 9171, 375 Cochitunts Road, Framingh Mars 01701

It's the man, not the machine

High-tech software development falls flat using low-tech management



tion languages and, ultimately, automated programming. But these technologies, even if implemented, will at best only

rginally affect the productivi ty of software development. If ory of every so-called software breakthrough in the past

Actually, the key factors driv-

ing substantive productivity im-

provements have been available for a decade. These factors have

little to do with advanced tech-

nology and everything to do with the integrated technical man-

agement process required to produce the highly integrated

Software begins with some

one's request for the computer

to do a useful task and ends with

the user employing the result. In

between, someone must decide

what the software is to do, how it

is to be designed, implemented

and tested and, ultimately, main

quired number of years. These activities interweave, loop back

and forth and combine in a very difficult-to-predict fashion. Even

the employment of the software

life-cycle methodology - a true

step forward — quickly runs up against the subtler tangled web

roduct we call software

place, bears little measurable re tion to the initial requiremen on the one hand and the ensuing code on the other. Testing is largely random, and a product's release is not infrequently driven

than its quality.

No one really knows how
much effort is expended by various product teurns across the diferring development phases. The
financial propie don't have a clue
as to whether the delivered
product represents a profitable. use of the come

The technology solutions cited rarely address the system-atic, interwoven nature of the

prise. It is still not clear whether we understand the development

we understand the development process well enough to develop

with the requisite power and flexibility to drive and coordinate

the multitude of securate devel

coment events. But even this ob-

our software to drive and coordi-

nate something that is funds

mentally a management, not a technology or machine, issue.

For example, during the past 10 years, a wide number of so-

phisticated data base manage-ment systems and fourth-gener-ation language products have appeared, most making the claim

be revolutionized and productivi-ty increased by up to a 10-1 ra-

tio. But which aspect of develop-ment and which piece of the productivity equation is being addressed? Typically, it is the

sourcesset Typically, it is the coding phase that reaps im-provements. The many other phases of software development (with the possible connected ex-ception of maintenance) are left

ruched. Total productivity

be 20% to 30% rather than

the claimed 1.000%.

that software develo

hich is that we cannot look to

servation hides the key prob

software tools and environmen

ets are simed at the pro-mer makes my point. Software development is not viewed as a highly integrated and inter-dependent series of activities. To be sure, CASE products, in their still primitive efforts to bring control to the design phase of development, illustrate a more sophisticated realization of the larger problem. Obviously, if we have a choice between using a productivity-enhancing tool, ever limited, and no tool, we choose to use a tool. But we

oductivity-enhancing people.

Solencing act
The challenge is, on the one
hand, to bring the many varied
human disciplines of activare development into play and, on the other, to measure the players and make them accounts to one another, to the corpo tion and, remarkably enough

It means, for example, bring-ing people from such disciplines as education, finance, technical d maintenance programs en software development ricinnel are educated, they are le to move flexibly between oject teams with maximum re-mion of skill. When the costs of project management are tracked and quantifiably related to final fuct and revenue, intelligen ecisions can be made for the ret time about the utilisation of

perience runs as follows: A super programmer once said to me of a very capable senior software manager, "What does that guy know about software? He hasn't programmed in 30 years. All be's done is manage." We all know that management has

nothing to do with software, Technology is always a ter tation wherever we try to substi-tute it for the need for human management. Software deve ment - and the use of software by customers — is all about man and machine, not machine with-

The real litmus test of to row's software productivity rev-olution will be this: When you pick up Computerworld on la 1, 2000 and read a reprint of this article, will you know it is a reprint? Or will the simple management processes we describe here still sound fresh, radical and modern? Ironically, we have been able to develop tomorrow's

Thirsty for the truth in the factual desert

READER'S PLATFORM ROBERT KENDALL

Picture two businessmen on the golf course. One stys, "You should get yourself a computer so you have the facts instead of using guesswork and intuition." The other responds, "We've certainly thought about it, but does it pan out economically?

normation systems man has a bunch that it will." One could argue that busi-nessmen today who are not fully up on computers probably

wouldn't take time off for golf. Neither is the inherent value of plies so much data to others, it is surprising how little data pro-cessing generates for its own

Nowhere is the lack of data so evident as in making trade-offs between program develope and computer operations. A re-cent Viewpoint article by Efren G. Mallach (CW, May 4) centered on the observation that "the computing capacity of the U.S. would be doubled overnight if people knew how to program."

While the author west on to weigh whether machine efficien cy was the appropriate goal there was no challenge to the statement itself

Doubling possibility? The statement is subject to question, however. Could we

cut the average program run-time in half by better techniques not just a few notorious exam-ples, but enough to truly double the computing capacity of the

And if all application pro-rams were twice as efficient, ow much difference would it ee' We can ignore the obviously impossible task of improv-ing all existing programs over-inght — increasing emphasis on maintenance attests to the immensity of that task.

Ignoring that, however, puts us no closer to answering the question unless we assume that computers run only application

Of course, that is not true. In large mainframes, more than half the CPU cycles are consumed by the operating system. In some cases, the figure is (In some cases, more than 70%.)

Keedall is a research fellow for Sets ware Productivity Research, Inc. or Cambreige, Mass., and a consultant in

In studying one large interac-tive and networked order-entry system to see how its capacity might be stretched, the d cycles were used by application code. The rest were used by system code and the control pro-gram, leading one to observe that if all application functions were removed and the time reduced to zero, there would be no detectable improvement

In studies conducted years are, it was discovered that in more than half the cases, the CPU cycles taken to schedule a

A large portion of the ren ing capacity goes to running sort programs and utilities that sup-port DP applications. Direct-access storage device dumps and as do other utilities, catalog updates and system mainte

How much time is taken in such system service functions? An educated guess suggests at least half. That leaves us with a rprising 25% of the system for running application

Well, not quite. We shouldn't forget compiling, testing and other application development services. Indeed, as computeraided software engineering tools take hold, this use of computers is one of the most rapidly ex-

Even before that, though, a substantial number of programs spent more of their lifetimes in the computer as source code be-ing compiled than as object code Now we are down to 25% or

less of the computer cycles being devoted to application code clearly not enough to contribute to the goal of doubling the capac-ity of computing in the U.S.

et the facts The fact is there are no facts -

no data about this vital DP activity. Until such facts exist, we will be confronted with a pseudosci-ence of supposition based on the atively obvious and frequent-

puter usage and its relationship to programming productivity un-til we substitute investigation and learning for those baseless things that "everybody knows." Until then, vendors won't truly know what to build, customers won't know what to demand of them and users won't know why or how to make the right trade

of any software project.

In the real world, most develcorrect shoos proceed in an aduits on software prede ty in the U.S. and Prance with New York ed James Frame Enterprises, Inc.

systems and SQL-based evolucts.

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SOFTWARE & SERVICES



Rosemary Hamilton

Reinvent. info center

the midst of an identity crisis, and one of the first things they should do is find a new name. The term information center

is dying out. Even executives within IBM, the founding father

In an effort to redefine then ves within a corporation, in-mation centers should more

at they are.

ed to microcomputing; other port both mainframe com puting and personal worksta-tions. Some are involved with departmental computing issues.

Yet they all have one thing in mmon: end-user support. A w name defining them as the end-user support organization would bring them more mean gful recognition within

M&D moves tool package to DEC

Will move Millennium to VAX by mid-'88, CEO Dodge your at meeting

BY CHARLES BARCOCK

dge Corp. will move its popu-Millennium application envi-tament to the Digital Equip-ent Corp. VAX by the middle of next year, said Frank H. Dodge, chairman of the Natick, Mass.-based software house, at M&D's

which two years ago prod the version of Millennium

totype is expected to be dy by the end of the year,

set for the VMS operating sys-tem, Dodge said. He added, how-ever, that M&D is undertaking the move with DEC's assistance.

Moving Millennium into the DEC world will enable M&D to move applications to the VAX much move quickly, Dodge said, DEC is helping M&D make the

help VAXs move into man-stream data processing, he said. M&D, which has soid soft-ware for the VAX for eight-years, currently offers much of its accounting and manufactur-ing lines for use under DEC* VMS. Mainframe software still accounts for 78% of M&D's revue, but Dodge said he antici-tes VAX software will repre-at 30% to 35% of revenue by

1992. Non-mainframe revenue
— currently 22% of the \$122
million M&D garnered in 1986
— is derived from sales to customers of Hewlett-Packard Co.
machines, IBM System/38s and
Honeywell, Inc. computers as
well as VAXs.

Dodge attributed the growth to steady demand for M&D's product line and said his firm's revenue is expected to be close to \$150 million in 1987.

The revenue figures were ted, some M&D observers suggested, to scotch rumors that M&D's owner, Dun & Bradect Corp., wants to sell M&D er unloading D&B Computing rvices, another subsidiary and ker of the Nomad II fourth-

In the opening address to the 000 assembled users, Dun & radstreet Chairman Charles loritz said, "While it would 2,000 asse m that some — includi perhaps, our competitors — might like to see us sell M&D,

Data View

VM and DOS/VSE operating systems still dominate IBM mainfr Sthough MVS/XA represents seen DOS/VSE make up two-thirts of I mainframe sites
sents early helf of all MVS sites, VM and
shirts of the installed have of mainframe.



IBM's latest Unix offering

has built-in 9370 support

RYE BROOK, N.Y. — IBM has rolled 9370 support into its lat-est Unix offering, the company "This is to satisfy the d they know they'll get from some quarters," said Kate Comiskey,

an analyst at Inter Corp. in Framingham, Corp. in Framingham, Maes.
"There is potential for Unix on
the 9370, but I don't think
they aggreeatively push it."
In addition to 9370 support,

the Interactive Executive for the 370 (IX/370) Version 1.1.4 will Continued on page 24

Power through



FISCHER

Tool manages licensed PC packages

Software, Inc. recently introduced a mainframe-based system designed to

med to run under the IRM MVS and VM operating systems, Host Storage & Retrieval (HSR) acts as a clearinghouse ing to Walter Josephson, president of Ap-

HSR is intended to work with softwa programs under site-license agreements, he added. It includes a microcomputer component called the Dialog Facility that lets users request copies of micro

NORTH PALM BEACH, Fls. - Applied er programs from the HSR mainfra component. The component au ly distributes software to wo ed on the software's avai

e user's security clearance. HSR includes a backup facility for the PC software, and microcomputer users can identify which files are included in the backup. The system generates reports for given time periods so that an adminisrator can track and analyze mi

trator can track ma.
puter software usage.
BSR carries an \$4,000 license fee for either MVS or VM operating environmicrocomputer HSR compo-

System tracks VM problems

SACRAMENTO, Calif. — RD Lubs, Inc. recently said it plans to release next month a problem-and-change manage-ment system for the IBM VM operating

system.

RD/Change was designed to belp users keep track of problems and make changes in a more controlled manner. It does so by providing a problem-and-change life cycle methodology that users can follow from the onset of a problem until it has been found.

The system is based on a generic life cycle that the company has built into RD/Change. For instance, when a problem is entered into the system, it is given a "nee" status. It then becomes an "assigned" problem once it has been given to a staff member who analyzes the problem.

If a request for a programming change If a request for a programming change is made, it is given as "ropen" status, which it maintains until the work on it has been completed. It then moves to a "review" status during which the changes will be examined and either approved or rejected. It finally moved to a "closed"

clude additional steps in the life cycle, the company said. RD/Change can generate

status reports of ongoing problems, RD/Change runs under VM/SP Re-lease 4.0 or higher. The company uses a graduated pricing structure, and the software license ranges from \$3,675 for low-end systems to \$11,675 for high-end pro-

Info center CONTINUED FROM PAGE 21

Today, the phrase "information cen-ter" doesn't mean much. Actually, it nev-

er really did, so perhaps they should have been called end-user support centers in the first place.
Strip away whatever knowledge you might have of what its function is and iso-

what is that? A center of information.

What is that? A center of information.

Whose information? What in those words associates this department with end users? Such a vague title could belong to the accounting or legal department. After all, they are centers of information, too.

Despite its ambiguity, the term infortion center really took off because of IBM's backing. In the early 1980s, IBM was heralding information centers as the new way to manage end users. It had a "fly-in" program in which it would fly ex-ocutives from customer sites to see its own information centers.

Such centers sprouted like weeds as ers took their cue from IBM. At that time, information centers were primar ly set up around a mainframe system to ommodate end-user request the burden on MIS. That information center, however, is

That information center, however, is long gone, and IBM plays a much more low-key role in the information centers of today. "I think the way IBM is looking at things is that the office is all-encompassing," IBM's Edward Baas said re-

laas, a senior marketing support rep-mative for office software marketing said, "It's not just information centers or specialty tools that we're looking at but a With IBM no longer playing the cen-

with IBM no longer playing the cen-tral role in information center activity, now is the time for users to come up with their own identity. "End-user computing center" is not quite as catchy a phrase as information center. But at least it says something

that will more clearly distinguish this group to a company's computi militan is a Communicati



said the only thing that remains con-stant is change. No sooner is a pro-um completed than changes get made And so many get made so often that staying in control of it all can be more

than humanly possible.
That's why thousands of companies
tike the BASF Corporation, Guart Food Inc. and Commerce Union Bank let ADR/The LIBRARIAN* do it for them Commerce Union's programmers

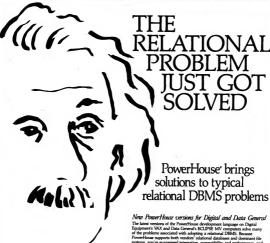
program in their inventory, including every change, available instantly. And While The LIBRARIAN's Change

Control Facility helps make sure every gram change is properly completed, ed and documented. And meets

And The LIBRARIAN's unique architecture can do it using a fraction of the resources other systems use.

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Unix

CONTINUED FROM PAGE 21

nclude full-screen editing for IBM 3270 splay stations and on-line documentation, IBM said.

Version 1.1.4 should be available by the end of September, the company added Early 9370 users were able to run

DX/370 Version 1.1.3. which was introduced in January, if they requested a ser-vice update. In such cases, IBM service ntatives would have to modify the Version 1.1.4 will enable 9370 users

to run this Unix operating system without modification, according to IBM.

"A program product"
"This is now considered a program product. It's much easier to install," an IBM

DK/370 can operate only as a guest un-der the VM operating system on IBM's 9370. It will require VM/SP Release 3.0 or higher, the company said.

Depending on the type of processor, the one-time charge for Version 1.1.4 will reportedly range from \$10,000 to

\$75,000

Rise wins printing patents; Focus link forged

Mass., has been assigned two 17-year U.S. patents that protect its technology to print photographs on a printed page us-ing a computer-aided publishing system. Rise brought a publishing system to market in 1986 that included a Masscomp ster, an enhanced Canon U.S.A.

ction Builders, Inc. has inte faced its Focus fourth-generation lan-guage and data base management system to the Britton Lee, Inc. relational data

Knowledge Engineering Envi-ament (KEE) has been demonstrated on an Intel Corp. 80386-based micro-computer, according to officials of Moun-tain View, Calif.-based producer Intelli-corp Inc. KEE, used in developing expert systems, was previously limited to workstations from Sun Microsystems. Inc., Symbolics, Inc., Texas Inst. Inc. and Digital Equipment Corp. Intelli corp also recently received a U.S. gatent

covering KEE's frame-based repre

tion facility for applying general knowledge to specific applications.

DEC has signed a distribution agreement with Relational Technology, Inc. that allows DEC to sell the Ingres relational data base management system to its cus-tomers using Ultrix, DEC's version of Unix. Relational Technology will continue to sell Ingres to Ultrix and VMS users and will provide support for the product.

Spokesmen for Relational Technology said Ingres is now available on the opersting systems provided by California based supermini manufacturer Elxai. The operating systems include Unix 4.2, AT&T's Unix System V and Embos.

Arthur D. Little, Inc. and systems in-tegrator ITP Boston, Inc. in Cam-bridge, Mass., have agreed to team up to offer a one-stop source of consulting on manufacturing processes and system

Oracle Corp. spokesmen said that onal data base ma system will be jointly marketed by Consystem was or jointy marketed by Con-vex Computer Corp. for use on Con-vex's C1 series of minisupercomputers. In addition, the Oracle DBMS will be jointly marketed by Ebsi for use on the Elxsi System 6400 minisupercomputer

Pansophic Systems, Inc. will sell

ness and Professional Software, Inc. in Cambridge, Mass., for use with Panso-phic's Starburst, a turnkey IBM Personal Computer AT-based presentati

The Software Maintenance Associa tion named Imperial Oil Ltd. in Toron-tion sthe recipient of its Distinguished Performance in Software Mainte-nance award. The association cited Imperial's "systematic methodology for managing systems" and its "active syner-

gism of users and data-processing profes-Fujitsu Ltd. in Tokyo will market Cul-linet Software, Inc.'s IDMS/R on Fu-jitsu's Facom M series of computers under a three-year agreement between the

Telesoft said it has signed a three-year contract with Cray Research, Inc. to port its Ada compiler and productivity tools to the Cray-2 and Cray X-MP supercomputers, which run under Unicos, Cray's version of Unix. Cray will have a license to market the Ada software. Telesoft said. In addition to the Ada compiler, Telesoft will be porting its source-level debugger, global optimizer and other lan guage tools to the Cray environment.

Conference



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Washington, DC Marriott Crystal Gateway 16 September 1987 Marriott Newton Hotel 15 September 1987

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To Register, phone or mail your reservation. Call Diane Scretter (800) 343-4952, extension 239. A limited number of rooms have ntil Sept. 10.

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suppliers to respond to this new IBM Statement of Direction

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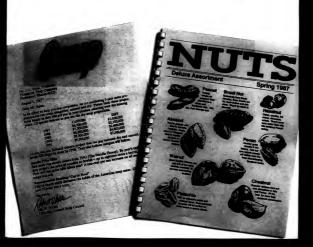
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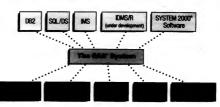
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NEW Systems software

RGL Business Systems, Inc. has an-nounced the Logistics Module compo-nent for its On-Line Material Management System, which runs on Digital Equipment Corp. VAX computers and

The software allows users to manage and control material through the purchas-ing, traffic and transportation, warehouse and job-site receiving and inventory-man-agement processes. The software allows

uitiple currency handling.
The pricing for the Logistics Module

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starts at \$70,000.

RGL Business Systems, P.O. Box 1006, Bloomfield, N.J. 07003.

Digital Equipment Corp. has intro-duced four upgrade packages for PDP-11 and MicroPDP-11 computers said to provide such features as complete software compatibility, improved packagir and peripheral selection and enhance

The PDP-11 system upgrade kits in de all hardware, operating system soft-re, documentation, field-service hardware installation and a software license upgrade. Prices for the products range

from \$10,200 to \$11,750. PRODUCTS

A Microvax system upgrade packag said to allow users to move from the Mi-crovax I system to the Microvax II while

retaining their software and hardware enclosures, was also announced. It costs between \$13,400 and \$22,400. DEC. 146 Main St., Mavn

Computer Consoles, Inc. has intro-duced software said to allow Wang Lab-oratories, Inc. 2200 users an upward migration path from the 2200 systems to sater Consoles' Unix-based Power 5

d Power 6 computer systems. The Basic-K compiler allows W 2200 applications to be moved onto Com puter Consoles processors, which can

support more than 80 users.

The compiler under Unix reportedly offers such language extensions and operating system enhancements as Unix utiliand aysuem enhancements as Unix utili-ties for performing previously pro-grammed functions, open file systems with nonrestrictive sizing, expanded memory capabilities and the ability to mi-grate to data bases.

Prices for the Basic-K compiler range from \$1,500 to \$4,500. Computer Consoles, Suite 1700, 950 Winter St., Waltham, Mass. 02154.

Languages

version of the Fortran programming language designed to ease the m of applications running on Diete applications running on Digital Equip-ent Corp. VAX/VMS workstations to in workstations has been amounced by an Microsystems, Inc.

Sun Fortran 1.0 includes VMS ex-emsions said to give Sun workstation users access to the application code written with VMS Fortran.

Other enh error messages and recovery and the Pointer data type, which provides partial compatibility with Cray Research, Inc.

Sun Fortran 1.0 costs \$400 and re-portedly will be available in September. It runs on the Sun-3 and Sun-2 families of workstations with Sun OS operating system Release 3,2 or later

Sun Microsystems, 2550 Garcia Ave., Moutain View, Calif. 94043.

WPmonitor, a utility for the capture and reporting of Wang Laboratories, Inc. VS IIS word processing statistics, has been announced by BEI Corp.

amounced by BEI Corp.

The core monitor program runs in the background and automatically captures, for each on-line document edit session as it occurs, the operator user identification, document number, liberary, volume, time, date, workstation number and revision ber. It also calculates the exact individual edit-session statistics for time number of keystrokes, number of lines and number of pages. A report generator allows creation of custom reports.

Software pricing is tiered and follows Wane's A. B and C CPU classifications. A

single class-B license is \$5,000. BEI, 2921 Eastlake Ave. E., Seattle,

Hewlett-Packard Co. has announced a software tool called HP Visor/V, which allows users to generate reports and ad hoc inquiries from relational data bases on the vendor a HF 3000 computers. HP Visor/V works with HPSQL/V, HP's relational data base that conforms to SQL. Names of data bases, tables and col-

umns are supplied as menu options so us-ers can produce custom reports, according to the vendor.
In addition, SQL commands can be en-

tered to initiate queries, create new data base items, change rows of data and maintain the data base.

Other features include on-line Help, the ability to view and modify a report be-fore printing and the ability to save queries, reports and sequences of commands HP Visor/V costs \$10,000 for the first

copy and \$7,000 for each additional copy. HP, 1820 Embarcadero Road, Palo Alto, Calif. 94303.



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MICROCOMPUTING





William Zachmann Antsy over

Hypercard With a graphical interface like that of Apple Computer, Inc.'s Macintosh inexorably working its way onto IBM and compatible

systems. I've been wondering lately how the Mac will retain its Hypercard, a new extension to the Macintosh system software developed by Apple Fellow Wi-liam Atkinson, goes a long was

ward answering that question. Hypercard is undoubtedly Hypercard is unnountenry one of the most exciting, innova-tive software products I have ever seen. It will permit develop-ment of new types of applica-tions that haven't appeared on personal computers before. It also offers a mach easier way of doing many more traditional ap-alitations.

with Hypercard is simply to characterize it. A highly innova-tive product, it just doesn't fit into the conventional categories of software for personal computers. Nevertheless, we hu have no other way to understand thing new than to com with things we know and to Continued on page 33

Sun mulls 386 PC

Could shine by beating foes to multitasking

BY ALAN ALPER

NEW YORK - Sun Microsys tems, Inc. is considering testing the high-end personal computer waters with a Unix-compatible, Intel Corp. 80386-based ma-chine offering true multitasking

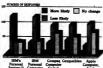
A source inside Sun con-firmed that a 386-based micro is under development but stressed that the Mountain View, Calif., firm has not yet committed to lounching such a system. The source said a 386-b ng a number of option

compete in the price-ser Microsoft Corp. MS-DOS e portion of the mic

tion or an add-in cope

Data View

PS/2 impact



Wang exec: Integration keys micro strategy

the convergence of high-end reconsi computers and low-end chincal workstations. Wang Laboratories, Inc. intro-duced its Wang Professional Computer in May 1982, nine We're looking at four or five he after the debut of the Things such as software consismonths after the debut of the IBM Personal Computer. In 1985, Wang amoused the Ad-vanced Professional Computer, its first machine based on Intel Corp. 180236 microprocessor. Although both systems were well-received, one drawback

was that they were not fully compatible with the IBM PC. But in May of this year, Wang an-nounced its first fully IBM PCcompatible systems: the 80286-based Professional Computer 280 and the Intel 80386-based

of desktop systems, recently dis cussed the company's micro

known as a word or company, but over the past sev-eral years, Wang has expanded its product line and its product

a systems vendor, not a PC ven-dor. Our primary business is to provide integrated departmental ctivity systems based on our VS superminicomputer.



re ck

ed than that. And our ed on page 33

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VS CUBUL Workbench: unique 32 bit erchitectur and the new XM memory extender. Programs with Data end Procedure Divisions of up to 16 MB may be handled on en AT

XM Memory Extender Combined with our 32 bit erchitecture, XM allows you to break the 640K burrier imposed by DOS. Run your VS COBOL. Workbench programs in protected mode and switch to real mode for DOS assessed.

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SYSTEMS & PERIPHERALS

sers say DPS 7 top system shows Honerwell boosts overall satisfaction; Amdahl posts gains And the state of the control of the

You said it, not us.

Nothing beats word of mouth advertising. And the word being spoken by users of Honeywell Bull systems is "satisfaction." In a recent Datapro Research Corp. report, Honeywell Bull

scored highest in overall user satisfaction.

Not second highest, or third highest.

Not second Highest

Highest. Period.

And users gave our DPS 7 mid-range computer high marks for to sees of operation and reliability. They also praised its operating system, GOS 7, that allows it to perform a wide range of functions, such as high-volume transaction processing, office applications, sophisticated networking and communications, and program evelopment. In short, they rated the DPS 7 the best system analistic. Again, not second best or third best.
The best

For months now, we've been talling you that, to Honeywell Buil, customers are more important than computers. That means we don't develop technology for technology's sake. We develop relable systems that solve problems. And we don't give lip service from 9 b.5. We give prompt service 24 hours a day, anywhere in the world!

Apparently, that philosophy has paid off. Because the same customers that we put first, have now put us in first.

Honeywell Bull

Customers are more important than computers.

Sun PC FROM PAGE 29

based PC as a proactive response to IBM and Compaq Computer Corp., the source said, noting that the firm is worried about being put on the de ow end of its market. Bob Herwig, an analyst at lambrecht & Quist, Inc., said

debate between Sun's East Coast and West Coast operations on the virtues of adding a 385-based machine to its ineap has only recently been resolved in fa-vor of releasing the product. The final decision, Herwig said, was delayed as Sun mahaving a bridge product for sktop commercial users and sether diluting the firm's Unix

tures an operating system run-ning Microsoft Corp. MS-DOS ang narrown corp. MS-DOS applications made any sense. Sun was also deciding how to po-sition the product during the os-going controversy over Micro-soft's MS-OS/2 vs. MS-DOS. "The mindset of the technical people in Sunnyvale in that they

send to sneer at anything but Unix. It does appear that the

marketing mentality has won out," Herwig said.

The 386-based micro would be Sun's first machine powered by an Intel microprocessor and would place the firm in direct competition with high-end microcomputers offered by IBM,

Compaq Computer Corp. and other PC vendors.

The machine, expected to be priced at less than \$7,500 with a

40M-byte hard drive and s high-resolution monitor, would be pit-ted against IBM's Personal Sys-tem/2 Model 80 and Compay's Deskpro 386 in many upcoming competitive bids placed by power users.

The Sun system is being de-veloped under the code name Roadrunner at Sun's Billerica

ration, analysts and users fa ar with the firm's plans said. maner with the term's peans said.

Roadrunner, sources said,
would leverage the firm's traditional strengths in the Unix operating system, emphasizing
Unix's inherent multitasking capubilities and networking via its

pathities and networking via its open systems architecture Net-work File System.

San's timing in the 80386 market could be fortuitous, ans-lysts said, since Roadrunner would provide true multitasking before both IBM and Compac, Multitasking for the PS/2 lise and Compag micros is tied to the availability of MS OS/2, which is scheduled to be available in barr-bones form by the end of the first quarter of 1988.

IBM's OS/2 Extended Edi-tion, which is intended to provide tion, which is intended to provide data base management and built-in micro-to-mainframe commu-nications capability, is not ex-pected unfil mid- to late 1989. IBM has said it would not dis-close Extended Edition's avail-ability until later this year. Any sitipage in the svalability of MS OS(2 and extensions to IBM of the contractions of the contractions.

from IBM or third-party vendors could prove to be a boon for Sun, analysts said.

could prove to ore a toom on our, malysts and. They would be offering a mily many and the state of the state ns, open systems : ing and expert systems develop-ment capabilities. Sun's family of technical

workstations have primarily been designed around the 68000 microprocessors, although its most recent product line, the Sun 4, uses a proprietary reduced instruction set micro

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For more information, call 1-800-222-EMC2 (In Mass., 607 - 435-254) Service Resignation of the ASSESS In Tenance of the ASSESS In Tenance of the ASSESS

The Sentem Fabracement Com

Wang

CONTINUED FROM PAGE 29

strategy is, over a period of time, to en hance that integration to the point where eventually, we will have a totally transparent systems environment in which personal productivity would be so well in-

tegrated they would appear to be part of the same systems environment I can assure you that over the next few months and [the next] year, we're going cantly enhancing the level of egration. There will be software and

state enhancements

Why did it take Wang so long to provide full IBM PC compatibility

in its systems? First of all, when we introduced our preduct, the Professional Computer, there was no de facto standard. IBM had just introduced its product; our design was done in parallel to the IBM PC design. We had a nber of advanced design features in the ial design of the PC, including things channel I/O architecture, which IBM, of course, has endorsed with its recent Personal System/2 anni

First of all, I'd say that almost every cor-

poration has VS superminicomputers. It's a safe bet to say that our existing custom-

er base is our most attractive prospect for our PC product line.

a period of time, our custo

a period of time, our customer base found our existing PC product fine quite attrac-tive for the application environments in which our products were being sold. It did become clear that there was some polarisation within the market and in our own customer base. We received increasing numbers of requests to pro-vide 100%-compatible products. So about 18 months ago, we licked off a major proj-

ing offer systems that lible with the IBM PS/2? competible with the BM Ps/27 The PS/2 is not a single product line or a single set of features. First of all, the PS/2 has two separate bus architectures. The xlei 25 and Model 30 are really IBM PC XT-based bus systems, whereas the Model 50 and above are Micro Channel-based systems. They really aren't the same system at all, or part of the same product line

at all from a technical point of view. We feel that the IBM PC AT bus is already the de facto standard in that seg ment of the market, and there's no reaso for us to regress to a lower perior

We believe that it will be some period of time before the Micro Channel architecture reaches the same de facto standard status as the AT bus. So there will be increased demand for AT bus-based systems. We are committed to providing in-dustry-standard platforms as VS worksta-tions, and hence, if that is the industry standard, we'll certainly address that

Hypercard CONTINUED FROM PAGE 29

things that are in some way similar to it. By looking at how it is both similar to yet different from — known objects, we come to understand the new object. Hypercard is constructed to resemble known objects, the metaphor being stacks of cards that the user may browse through. In the simplest sense, this means going through a collection of cards in se-

Individual cards displayed on the screen can include both multifont text and graphics. In the simplest form, the user might go through a stack of cards on some subject like reading sequentially through the pages of a book. Typically, the use will use the mouse with forward and backward pointing arrows on the card currently displayed to move forward and backward through the stack.

Buttons can be defined to do almost anything. Moving a card in the stack forward or backward is one of the simp things buttons can do. A button may be defined to move to a table of contents or an index. Buttons defined in an index may move to a topic. In fact, buttons can move to any card in any stack, initiate pro-cesses, generate sounds, do calculations and a lot more.

For hard-core digital macho types ypercard may be viewed from a comely different perspective because un peterly different perspective because un-derlying Hypercard is a very powerful command language: Hypertalk. Hyper-talk is nothing less than a powerful proce-dural command language for the Macin-tools. What Hypercard buttons actually do hen pushed is to initiate sequences of rtalk commands.

Every button has a Hypertalk script associated with it. This is a sequence of Hypertalk commands. Hypertalk in-cludes, for example, control structures such as "if...then...eise," "repeat for" and "repeat while." Hypercard convincingly demon-

strates that Apple hasn't lost the innova-tive edge that characterized the Macin-tosh from the start. The Mac may never ome the standard of corporate personal computing, but Hypercard certainly offers yet another convincing reason to take the Macintosh seriously as an after native to the more widely used IBM and compatible systems in business.

room is vice-president of research at laterna-

Grow Power.



The New WYSEpc 386 and New 286 models are designed for speed, power and upgradability.

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All the new systems include a 1.2 MB deskene and hard drive controller. MS.DOS 3.2 operating system with enhanced features and GW listic 3.2. They also feature the WYSE Window system status display which indicates important system messages, disk activity system performance, date, time, and processor speed The WYSEpc 386 Model 3216 unitizes the 32-bit 80386

CPU chip operating at 16 MHz with zero wait states. A dedicated 32-bit memory bus provides fast access to up to three memory cards expandable up to 6MB RAN Other features include six PC AT-computable accessor slots, four 16-bit slots, two 8-bit slots fone half-size

The WYSEpc 286 Model 2108 has a 16-bit 80286 processor running at 8 MHz with 512K of memory is features seven PC AT-compatible accessory slots, five 16-bit sions, and two 8-bit sions.

The WYSEpc 286 Model 2012 has a 12 5 MHz CPU with one ware-state, IMB memory, and seven PC AT-compatible accessory slots. Model 2214 features IMB of fast, true-zero wait-state memory, and expanded memory addressing through software emula has nine PC AT-companible accessory sloss. MTI is an authorized distributor of WYSE so we can set

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representative for a demonstration of all the new MultiMate Advantage II options (For upgrades, call 800/367-8126).

After that, you may conclude there's only one option left.

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Systems

Laser Digital, Inc. has announced the Pacer 386, an Intel Corp. 80386-based

N F W

P R

The Pacer is said to have a clock speed of 16 MHz. It incorporates 512K bytes of random-access memory on the main board, which can be expanded to 8M bytes via 32-bit expansion boards. Fea-tures include eight full-length expansion slots, a 200W power supply, a real-time clock/calendar on the motherboard, an enhanced IBM Personal Computer ATstyle keyboard and Microsoft Corp. MS-

ODUCTS DOS. Options include a 1.2M-byte floo drive and a choice of hard disk drives with capacities of up to 100M bytes.

A Pacer 386 with a 40M-byte hard disk, a 1.2M-byte floppy drive, a mono chrome monitor and a graphics card costs \$4,695

Laser Digital, 1024 Morse Ave., Sunnyvale, Calif. 94086.

Software Link, Inc.

Software utilities A multiuser, multitasking operating system for Intel Corp. 80386-based persons computers has been introduced by The

PC-MOS/386 is said to be able to y-intensive applicat ven though its kernel occupies only

128K bytes of me The product supports 32-bit native mode and the virtual Intel 8086 mode that ows support and control of multiple 86-compatible applications or tasks,

All versions support record and file locking, print spooling, remote modern access and multilayer security, according

The Software Link PC-MOS/386 is available in a single er version for \$195, a five-user version

for \$595 and a 25-user version for \$995. The Software Link, Suite 632, 8601 Dunwoody Place N.E., Atlanta, Ga.

Development tools

Multitasking development software that combines Basic and Ladder Logic and runs both languages concurrently on the same Bitbus board has been announced by

Basic and Ladder Deve ftware was written to execute on any thus 8044-based core. Features inch broom sout-based core. Peasures include a token interpreter that forms the execu-tion vehicle for Basic; acreen-oriented menus; on-line editing of both Basic and Ladder programs developed on the host personal computers; and an interactive

compiler and debugger.
Each remote Bitbus card executes its own Basic/Ladder program. Up to 10

we remote boards may be cascaded. The software costs \$1,995.
Robanks, P.O. Box 493, Banks, Ore.

Software enhancements

Target Software, Inc. has upgraded its Macighting spell-checker for the Apple Computer, Inc. Macintosh and changed the product a name to Mentor.

the product's name to Mentor.

Mentor comes with an abridged version of the Merriam-Webster, Inc. 100,000-word Ninth New Collegiste Dictionary. A second version, called Mentor Plus, includes the Merriam-Webster 75,000-word Pocket Dictionary, com-

plete with definitions.

Features include automatic and ma ual hyphenation, no limit to characters that may be added to the dictionary, a checking speed of 140 word/sec. and net-work compatibility.

intor costs \$99.95. Mentor Plus

Target Software, 14206 S.W. 136th St., Miami, Pla. 33186. CSSL, Inc. has introduced the Awe-

Data storage

some I/O Card, a hard-disk subsystem designed to eliminate I/O logisms in IBM rnoual Computer ATa and compatibles. The card is said to double disk capacity and decrease average access time. Ac-cording to the vendor, the proprietary de-sign intercepts and stores commonly used data from the disk. The card contains a solid-state disk accelerator and is socket-ed to allow an additional 256K or 512K bytes of nonvolatile CMOS random-access memory for disk acceleration

The Awesome I/O Card costs \$595. CSSL, 909 Electric Ave., Seal Beach Calif. 90740.

Board-level devices

The Smartpanel/368, a single personal computer board designed to provide users of Texas Instruments, Inc. 5600 and 5800 computers with a time-of-day clock, has been announced by Houston Comter Services, Inc.

The board automatically sets the or ing system's date and time every time According to the vendor, the correct date and time are stored in the Smart-panel module itself, backed up by an inte-

The Smartpanel/368 is priced at \$399. Houston Computer Services, Suite 200, 11001 S. Wilcrest Drive, Houston.

Nixdorf tames the data entry tiger.



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become an expensive and unaccept-ably slow process. And it's getting harder and harder to find new ways to skin the cat. Especially if the cat's a big one, and it decides to resist. Notdor's answer to the problem is to reduce the size of the tiger: we can help you complement your host

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So, if you have a data entry tige by the tail, call Nixdorf. We'll show you how to turn him nto a pus

M C 300 Third A

NIXDORE

NETWORKING

DATA STREAM

Mark Freund

Top-down LAN planning

Recently, an MIS director was asked by the manager of his comould we begin?" His answer is typical of high-level MIS de ran typical of high-level MLS de artments in large corpora-ions: "You must begin with a lan. Initially, I would suggest a cods analysis of the end-user epartment, an inventory list of

r cabling requirements." Corporate MIS departs

re increasingly promoting in-estigation and pilot implemenon of new networking techwever, all too often there

lies a gap between manage-ment's high-level directives

Disoriented? Part of the problem stems directly from orientation. Upper

management is often looking at the big picture — and rightly so. Their subordinates' perspective, however, is often much nar rower and tends to be highly product-oriented - to every-

The first and most essential Continued on page 41

Shielding nets from disaster

Vowing self-sufficiency, McKesson switches to satellite-based system

BY JEFFRY BEELER

RANCHO CORDOVA, Calif.

MCASSON CORP. 8 INCh. INCA. Services organization have never forgotten the violent winter storm that thrashed much of Northern California 2½ years ago. The storm brought pro-leased formorous and trisoneed. longed downpours and triggered extensive flooding that washed away the terrestrial communica-tions links between the company's main data center here and

tually replaced the lost nes and restored the nt the company a son about the dan-

In order to prevent a repeti-tion of the flood-related disaster, the \$7 billion corporation says is

Price cuts should up modem use

BY ELISABETH HORWITT

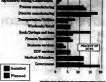
During the last few months, ven-dors have quietly made \$2,495 the standard price for full-duple 9.6K bit/sec. dial-up modems. Late lest month Codex Corp., one of the last holdouts, cut prices on its own 9.6K bit/sec.

nications significantly less sus-restible to natural and mandial-up modems to \$2,495 for the standard model and \$2,745 for the same model with error le calamities than terrestrial "Obviously, we have to be metitive with other com

competitive with other compa-nies who have already cut their prices," said Peter Edelstein, manager of dial-up product ma-tacting for the Mansfield, Mass., firm. Within the last few months, Concord Data Systems and NEC America. In these said toward America, Inc. have also lop \$1,000 off the original \$3,500 price they put on their 9.6K bit/ sec. modem introductions more

According to a recent reg non Brothers, Inc., the Continued on page 39

Data View



TCP/IP link

BY PATRICIA KEEPE BERKELEY, Calf. - Cen Systems West, Inc. recently introduced communications soft-ware said to link users of Apple Computer, Inc.'s Appletalk network to Transmission Control

Protocol Fourth-quarter availability is sinned. Pricing has not been de-Unwelled at the recent Mac-world Expo in Boston, TOPS Terminal for the Mac reportedly

tion of an earth station outside its Drohan Data Center here and

mented in early 1989, it will make the firm's internal co

Mac users get

involves nine of the con

bles users of the Apple Macintosh to communicate with manes ranging from worksta-Continued on page 39

printf("Hello, world\n");

frame C Cor

announces a

your programming investment across operating environments. Virtually every new computer supports C, and portable programs created with the mainframe complete under OS or CMS will run on any other machine.

bler programs, MAIN routines in other high-level languages, and pockages such as IBM's ISPF and GDDM can be invoked directly fre

rom Kernighan and Ritchle and the attice PC C compiler. The run-time brary produces explicit numbered error messages and a traceback of ac-

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Mobile, AL 36691. Telex: 701238.



The LAN Gateway People An ICOT Company

Mac users

CONTINUED FROM PAGE 37

tions to supercomputers on the TCP/IPbased networks proliferating throughout many Fortune 1,000 companies, government agencies and academic institutions. TOPS Terminal not only given Apple users access to corporate host systems but does so within the context of the familiar Maxintosh environment, sail Namiliar Maxintosh environment, sail Na-

miliar Macintosh environment, said Nathan Golfhaber, president of Centram. Centram, an independent subsidiary of Sun Microsystems, Inc., as the developer of TOPS, network software enabling distributed file service between Mac., Microsoft Corp. MS-DOS., IBM PC-DOS

of 101%, network software enabling distributed file service between Mac, Microsoft Corp. MS-DOS, IBM PC-DOS. and AT&T Unix-based computers. Using TOPS Terminal, Mac users can tap the applications and file storage of any number of networked hosts simultaneously through multiple terminal-ernalition windows, the vendor said. A concur-

rent modem connection to a remote host may also be established.

Users can run host-based applications while concurrently using a modem-based connection to commercial data bases, Unix utilities, bulletin boards and electronic mail services, the vendor said.

ons utatics, objects noises and electronic mail services, the vendor said. They can also cut and poste between different terminal emulation windows. A Mac possessing 512K bytes of random-access memory can reportedly supnort more than a done concurrent see-

sions. The software supports a broad range of terminal types, including Digital Equipment Cop. VTIO, VTS2 and VTIO2 terminals. It is said to support effective terminal-to-host transmission speeds of between 7.2K and 9.6K bit/sec. The package's integrated text editor allows users to-odd Unix. IBM Personal Computer and Max text files without conversion.

Price cuts

fastest growing segment of the modern market is made up of asynchronously synchronous moderns that can support transmission rates of up to 9.6% beines, over either lessed or dail-up lines. Moemen of this type accounted for less than \$40 million, or 4% of the modern market's reversence in 1986, the report said, but evered to grow to more than \$500 million, or 40 million, or 4% of total modern revenues, in 1989, according to the investment con-

sulting firm.

Codex has seen "an immediate and strong response" in sales since to be a potential cuttomer snow should be released to the contential cuttomers know shoul the reductions will be necessary before the products become cost-effective for the majority of IBM Personal Computer users, be said. "Today there are far more synchronous than snynchronous applications of the products and the product of the products and the product of the products are far more since the products and the products are for the products and the products are a major sinch for these products."

Other vendors who now offer 9.6K bid, sec. disl-up moderns for \$2,495 are Cermetek Microelectronics, Inc. in Sansyvale, Calif, NEC America, Inc. in San Jose, Calif, and Universal Data Systems, Inc. in Huntsville, Ala. Universal Data will not be shipping its moderns until October, the company said.

IBM launches 9370 in central office market

IBM has become a serious contender in the intelligent telephone networking equipment market. The company recently amounted a major contract to supply United Telecommunications, Inc. 'a telephone companies with a combination host/local-area network configuration.

passie conspunes with a contensation bootfoorlares network configuration that will support intelligent services life of the processing and call processing, a United Teaching and call processing, a United Teaching and call processing with the processing that the processing that the processing that the processing companies, bousting data bases of exercise-related information such as call-originator profiles and routing data. The 9370s, along with the EMS System/88

in fault-tolerant processors (which will act as communications froat ends), will be linked over IBM Tolene-Ring networks. IBM won the United Telecom contract from several vendors already firmly entablished in the central office equipment market: AT To Northern Telecom, Inc., and Digital Equipment Copp. Getting the contract on only act abilities IBM is a set of the contract on only act abilities.

market: AT&T. Northern Telecom. Inc. and Digital Engineent Corp. Certing the contract not only establishes IBM in the rapidly growing contral-editor processing node market but also positions the vendor to influence telephone companies as to their future service offerings, according John Walsh, managing director for integrated Strategies Group, Inc. Part of that direction may be toward interfacions.

ct central-office 9370-based services with on-premise 9370 applications, Walsh

One potential area of integration in between BMs 370 based network-netvice management system and the 9370 running BMs a private network management system. Netview, Washb suggested. This would provide users with a way to centrally manage bybrid networks that consider givinel lines with carrier services. The integration could take place through Signaling System 7, a telecomsistence of the systems it develops for United Telecom.



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LAN planning

step to the planning process for a LAN is for upper management to guide the project leader several steps backward, to help that person see a bigger picture. For instance, which other departments fre-quently interact with the one selected to receive the pilot LAN? And what ext ing computing resources does the pilot partment currently employ? Answering questions like these will help the proect leader recognize the potential mag-nitude of his recommendations and scourage a quick, product-oriented so-

The next step is to become focused. Encourage the project leader to define what it is that the end-user departme does functionally. An understanding of the business function is one of the mos equently ignored aspects of any system sign and/or implementation, yet it is the most important. Once the business function is defined, assess how elements ion are being utilized today and determine what some of the end users explicit needs or desires are for a

tion in the future. Now it becomes important to define and document the current automation in-ventory (if any) and its corresponding in-vestment value. Remember, utilization of current investment is important.

Shielding CONTINUED FROM PAGE 37

s, according to Turner, the data cen-

With a satellite-based network, McKesson can maintain a network con-trol backup facility. "We could rebuild our network simply by moving an earth station from here to our other data center in Oakland, Calif.," and reestablishing net-work operations from there, Turner ex-plains. In contrast, switching to a backup data center under the company's current terrestrial configuration would involve rerouting all of the com The satellite link could also provide re durdancy for the dial-up public lines that the company uses to exchange customer information between drug stores and its

er-entry system. Adoption of the satellite co ons capability is only the latest and most nent in a long series of steps prominent in a long series or series McKesson has taken to duplicate its critical systems and minimize its data center's reliance on external utilities.

Some of those safeguards are some at unconventional. For example McKesson is the only major corporation in the Secramento, Calif., area with a direct fiber-optic feed from the local Pacific Bell telephone company central office.

Usually, fiber-optic cables go from the telephone company to some central location, probably a manhole somewhere, where they then branch out to the various data centers," says John Fitzgerald, McKesson's vice-president of informa-

McKesson's penchant for systems autonomy and backup is a direct outgrowth of the nature of its business. "Ours is an inherently low profit margin industry,"
Turner explains, adding that the trick is to
keep costs down while providing customers with top-notch, reliable service.

The next step involves guiding the end user into the future. Ask "Where would you like to be in 12, 24 or 36 months?" With the results from responses and some purallel research into the LAN industry, several distinct approaches may be developed. Define two or three paths that may take the uper fro his current state of auto sired goal one to three years from now

User motivations may vary from con te connectivity to peripheral sharing to using out of existing centralized processing systems. Regardless, the develment of alternative paths to migrate today to tomorrow is important. If ing else, they provide management

with a basis on which to build, a point of erence to react to. Of equal impor-oce, rough order-of-magnitude cost es-

ates can be created. Another common qui how to go from a "conceptual plan" to a working, reliable system; in particular, how to deliver a LAN installation to users

in a timely fashion without getting locked into poorly standardized technol me the alternative paths, and select the one whose basic philosophy and approach, as well as cost/benefit ratio, best suits the organization it is serving. Then develop a phase-by-phase approach to im-plementing the LAN and other related

ning and physical proof that what is put on paper can also be put into their organiza-tion in a somewhat recognizable manner. The goal here is to plan, design and then implement highly integrated, modular systems that allow flexible adaptation to dynamic corporate environments. This may be accomplished today, while main-taining 75% to 95% utilization of the initial capital investment a year or two further into the project.
Powerful LANs can provide MIS with

that capability today, but only when properly planned

Freund is a co-founder of Interconnect Consulting Group, a Passdens, Calif., company that designs, en eers and installs networks primarily at Fortune

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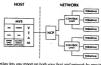
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N E W Lacal-area network hardware

A local-area network designed for IBM Personal Computers, PC XTs, ATs and compatibles has been announced by Trame-

The Net-127 PC netwo features peer-to-peer architecture. It supports up to 127 users, linked by telephone or twisted-pair wiring. The network has device locking security features and two extra sockets on the network card that allow proprietary programming of read-only mem-ories and the use of diskless sta-

The Net-127 can handle data sion for user stations up

to 1,000 ft apart. It sa ssoft Corp.'s MS-DOS The Net-127 PC network

costs \$249.95 per node. Trans-M. 28 Blacksmi Drive, Medfield, Mass. 02052.

Lacal-area network software

Software that allows Digital Equipment Corp. VAX and Miux users on Decnet nodes and Vaxclusters to use Detanex, Inc.'s Hasp+ and EZ-SNA/Remote Job Entry (RJE) software has been appointed by

RJEnet uses store-and-for rare techniques for file processing. Console commands can be issued through RJEnet to any

TOWER LIFE STANDS TALL WITH HYDRA*

host mainframe connected to the VAX. The product can reported-DUCTS ly support up to 50 nodes for each Hasp+ or EZnet/RJE copy. Hasp+ allows VAX users to perform RJE and file transfers into most mainframes and mini-computers. EZSNA/RIE perrms the same functions into IBM Systems Network Arch

ture networks Prices start at \$1,000, including a host module for the Hasp+ or EZSNA/RJE node and support for one remote node. Expansion costs \$250 per node. Datanez, P.O. Box 1728, Eu-

gene, Orc. 97440. Customer-premise equipment ers of IRM 3270 systems

Dover Con introduced its B-1 PAD for us-

The single port B-1 packet as-embler/disassembler (PAD) is compatible with X.25 networks, out PADs and front-end PAD software. It allows a single IBM 3270 access line with up to 32 devices to connect to a packet-

switched network via a single The B-1 PAD is priced at \$2,795.

Dove Cor ite 966, 1412 Broadway, New York N Y 10018

Epic Data, Inc. has introduced

four data collection system conollers said to provide host links and party-line speeds up to 19.2K bit/sec. as well as control

up to 96 terminals per party line. The Network Control Unit controls up to 16 party lines of 96 terminals each at spec 19.2K bit/sec. The IVAX Controller controls up to eight par

ty lines of 96 terminals each.

Based on the IBM Personal Computer AT, the Personal Computer Controller is said to handle up to four party lines with 24 terminals each running at up to 19.2K bit/sec. The Host Control Unit-MC can control up to two party lines of 24 terminals each.

Base prices \$6,000 to \$28,900 range from Epic Data, 7280 River Road, chmond, B.C., Canada V6X

Diagnastic equipment

monitor that provides timestamping, mnemonic display, data emulation and data recording has been announced by

Atronix, Inc.
The Atronix LM-1 is a software controller instrument that time-stamps every character. modem change and error. It is capable of configuring each line differently so users can receive asynchronous ASCII and trans-mit IBM Synchronous Data Link Control EBCDIC. They can test protocol converters and then save the data as DOS files.

The monitor provides data communications equipment and data terminal equipment simula-tion. It displays 1,600 readable data characters and records data directly to disk in full-duplex

ode at 9.6K bit/sec. The Atronix LM-1 line moni tor costs \$1,595 Atronix, 780 Boston Road,

The Model 61 RS-232-to-co axial converter, introduced by Telebyte Technology, Inc., is said to alter standard data sig-nals to provide full-duplex communication on a single consist

The Model 61 is said to sa ple the various control signals in the RS-232 interface and derive its power from them. Full-duplex operation is provided for transup to 9.6K bit/sec. over dis tances of 2,500 ft. A data terminal equipment/data communica-tions equipment switch is provided to allow reversing of pins two and three of the RS-232

The Model 61 can be ordered with either a male or female DB-25 RS-232 connector. It costs

Telebyte, 270 E. Pulaski Road, Greenlawn, N.Y. 11740.



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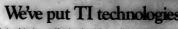
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were capable of handling 3,000 pagper month. But with TI Ossull.aser Prinners, you can produce as many a 25,000 pages a month, and at speed of eight and 15 pages per minute. It's what we put into Ossull.aser Prinners that makes their output so morial.

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increase operator productivity and distincts forms wasts.

The intest addition to our printer cands in Model Medical Actions to the printer

family is the Model 805 demand document primer. Just like the other family assessment, it's designed to be rugged and other superior puper handling. But its differences make it ideal for applications where space to linuard and paper waste is a consideration.

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imove for its study qualities. We build them to offer industrial strength and draign dambility, coupled with convenient features like easily changeable font corrections.

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SYSTEMS & PERIPHERALS

HARD TALK

David Bright

DEC juggles,

confuses

and stoked up high-end prices to better reflect value. A similar juggling took place in March. One end result of all this is

that a high-end VAX 5000 series

\$100,000 more than it did jus 51/r months ago. But DEC off-

ture. They point out, for exam-ple, that it has introduced dens-

ntable products and placed a

cials stress that costomers ould look at the whole pic-

er and less expensive mem

one-year warranty on all its products. According to Marc

Roberts, corporate product op

erations manager, the total cost of ownership for the high-end

VAX 8000 series systems is now

less than it was before, despite

paying more for the same systems, and therefore messing up their carefully planned budgets,

simply haven't figured every-

but perhaps it might have be better, marketingwine, if DEC had left system prices alone and

That may very well be true,

instead looked for other ways of

reducing the total cost of owner

nes be difficult to make people

ship. Let's face it, it can some-

think they are getting a good

ance doesn't

deal when prices go up but per-

In the past, surely DEC and other computer vendors have

raised system prices like this, but no particular instance com-

customers are quite happy with the changes. "The general re-

sponse has been very positive." he notes. In a DEC survey of

pany's 100 largest ac-"People were generally

readily to mind. "I'm sure we've made price increases in the past, although I can't re-member when," Roberts says. Overall, Roberts says, DEC

the basic price increase. Roberts suggests that cus-tomers bothered by the notion of

CPU now costs at least

Earlier this month, Digital Equipment Corp. juggled its prices around a bit. It cut prices on some of its low-end systems

Beacon brightens Boston stocks

Single system installation ups trade processing, volume, contains costs

BY STANLEY GERSON

BOSTON - For more than 150 years a quiet regional exchange in the shadows of the trading world, the Boston Stock Exchange is gaining its share of the spotlight by installing the Bea-

The \$2 million Beacon system is a stock trading and com-munications application designed to run on three Stratus Computer, Inc. fault-tolerant minicomputers working in con-junction with about 100 Zenith

junction with about 100 Zenith
Data Systems personal computers. Although the exchange
switched to the new system is
switched to the new system in July, some fine tuning is still be-

"Beacon is the first attempt to put all the capabilities on one system at one time," says Rob-ert L. Andrews, data processing manager of the exchange, in ad-dition to remiddies trade." ert L. Andrews, data processing manager of the exchange. In ad-dition to providing traders with current stock prices, the system automatically executes trades at the lowest possible price for buy-ers and at a low cost per transac-

Single system unique Andrews says other regional ex-changes have systems that per-form the same tasks Boston's does, but those systems are col-

ons of separate hardware and software applications, not a single system installed at one time. Although Andrews stops short of claiming that Beacon puts Boston far ahead of other regional systems, be says it is a safe bet that Boston will no long-



er be technologically behin Andrews, who came to the acton Stock Exchange in Febperience in the securities indus-try, having helped develop the National Association of Securi-ties Dealers' Automated Quota-

The Boston exchange is one The Boston exchange is one of five regional exchanges; the others are located in Obicago, Los Angeles, Philadelphin and Cincinnati. Founded in 1834, the Boston Stock Eachange has operated short continuate and continuate continuates. erated almost costin

e, the exception being sever months at the beginning of With 200 members, the exwin 200 memoers, the ex-change trades only equity securi-ties, including stock, preferred stock, warrants and books. It does not deal in over-the-counter stocks, commodities fu-

ers or options Technology has played a key le in turning the tide of the exchange's fortunes since 1981, when it lost more than \$1 mil-

lion. Inadequate systems mean Boston could not process trades fast enough to achieve econo-mies of scale. The exchange had harging more per trade th other trading centers. In 1982, the exchange asked its members

for a manicus commutered to up-grade its computer system.

Members responded to the appeal by putting up \$750,000 in working capital, which has nince been paid back, according to James Crofwell, senior vicepresident and treasurer of the exchange. "It was time to put up or shut up, and we got belp, not

just from regional members but from the Boston offices of na-tional firms, "Crofwell recounts.

Cutting costs

Some of the money was spent on
an IBM 4381, which has helped
the exchange out costs and costributed to there rate cuts aince
rate cuts have of the price of a trade by The Beacon system is ed at further acce

automatically by scanning all U.S. eachanges and locking in the best bid available, using the the intermarket Trading System, a computer securities trad-ing network of which the Boston hange is a member. The system is operated by the Securities

After an order is entered by a oker, it goes to a trader on the floor who may execute the order or delay in hope of a better price. Continued on page 46

Surge seen for optical disk drives

BY DAVID BRIGHT

MOUNTAIN VIEW, Calif. -Optical disk drives will see much ter acceptance within the pands to broad business applica tions, a recently released report predicts. In addition, a signifi-cant portion of those drives will

cant potentia custome crives was be erassible units.

By 1990, worldwide revenue from optical disk drives will ex-ceed \$1.4 billion, up sharply from \$200 million in 1986, according to the report from Disk/ Trend, Inc., a market research

m based here. Optical disk drives are cur rently broken down into two cat-egories: read-only types (mostly in a compact disk/read-only memory formst) and those that

So far, the major applicati for the write-once drives have been in image storage, for which the drives' performance limitstions are not a serious drawback. Those applications include law enforcement, military system and medical information storage As various system developme programs now under way reach completion, the drives will also be used for broader based busi ness applications, the report

reached only 31,700 units in 1986, according to Disk/ Trend. But the research firm says shipments should triple this year and nearly triple again in 1988, finally topping one railion in 1990. In 1990, shipments of read/write drives of less than 1G-byte capacity will reach some 619,800 units, surpassing read-only devices as the mo popular type of optical drive, th report predicts.

Erasable optical disk drive

should soon be making a big its pact, Disk/Trend reports. The Continued on page 46

Raster adds to graphics capability Announces collaboration with Sun to ensure hardware portability

WESTFORD, Mass. - Raster The company claimed that image overlays. Prices start at \$33,000; shipments are sched-

Technologies, Inc. recently in-troduced a graphics processor designed for high-performance

In announcing the Model One/385, the company also in-troduced the first two members of its family of GX4000 3-D praphics accelerators which were designed for use with Sun Microsystems. Inc. worksta-

The Model One/385 re edly features a proprietary IEEE that is optimized for 2-D the system processes up to 140,000 3-D vector/sec. It was designed to provide a resolution of 1,280 by 1,024 pixels, sup-port for eight local light sources and up to 16.7 million colors. It also features a built-in directmemory access interface for connections to a range of oroces-

rs Raster said The system was designed to allow flexibility and upgradabi-lity with coefigurable features, including up to 12M bytes of lo-cal display list memory, 8 to 24 its of image memory, doub support for multiple at displays and 8-bit

d for the fourth quarter. Asser and announced a col-laborative agreement with Sun, under which the companies will work to ensure graphics noti-ware portability between the Sun-3 and Sun-4 workstation families and Raster's GX4000

The GX4000 series was designed to speed execution of pro-posed ANSI Programmer's Hi-erarchical Interactive Graphics Standard (PHIGS) and PHIGS+. A configuration that

Strobe Data development allows DG software to run on IBM PCs. Page 46.

Falcon executes DG software on PCs | Beacon

Data, Inc. recently introduced a coprocessor card and software package for the IBM Personal Computer XT and PC AT that dly enal ten for Data General Corp. Nova

ies those ma s to execute software writ ecute DG's RDOS and other

software written for the Nova computers without any repro-gramming or special software, according to Strobe.

The Palcon coprocessor be-

the PC processor serves as a peripherals controller in such a system, according to Ellen Oli-ver, Strobe's director of market-

Sold to developers Oliver said Strobe is selling the system primarily to developers, who will resell it in a package with their Nova applications software and an XT. AT or a

The Palcon can also emulate 16-bit DG Eclipse instructions,

some customers have been using the Falcon card primarily to make an XT or AT into a muitiuser system. This can be done by using the PC's serial ports or

by attaching a multiplexer, she Currently available, the Pal-

con coprocessor carries a suggested retail price of 13,975

Quantity discounts for the product are available, Strobe more fees and the greater pres-tige that goes with handling

within 15 seconds, the trade is automatically completed. Such ution keeps traders instant execution keeps traders from having to perform many trades for relatively small orders and frees them to spend more time personally handling large orders. The overall effect is to speed up traders, enabling the change to handle more trades. As time goes on, that will mean

rge trade volumes. Although it is a total system, Beacon is composed of two parts. One Stratus XA600 prosor handles communications with exchanges to gain currer stock quotations — the so-called ticker plant function — while the XA2000s process the trades and perform workstation functions for the PCs used by the members

on the floor. In turn, each user has two In turn, each user has two screens, one containing stock price information and the other carrying on the intelligent func-tions of the PC, including histori-cal information on the stock. Members needed some train-

ing to work with the PC, having worked before only with Quo-tron Systems, Inc. terminals, which have different keyboards than PCs. "You have to be com-fortable before you can do any

fortable before you can no any trading," Andrews explains. Beacon does not displace the exchange's 4381, bowever, which is used at night to store information taken from the on-line machines. Data stored in the 4381 is sent to the National Securities Clearing Corp. and is also used in monthly statements. And in a stage following Beacon's development, member firms will be able to connect their

etothe 4381

scon's software was d signed by Ferncon Associates Inc., a Westford, Mass.-base firm that specializes in financial services applications written for Stratus computers. "We see Stratus as being a good on-line transaction processor, and it has good networking," says Craig Conti, a Femcon cofounder and

executive vice-president.

Conti says Ferncon is hoping Consi says Femcon is hoping for wide marketing of Beson on the advent of 24-hour trading. "Other exchanges believe they have to be in and become part of the global, 24-hour trading network in order to survive," be says. Buropean exchanges similar in size to Bostone a have expressed interest in a Bescontramental method.

type system, be adds.

Founded in 1980, Ferncon's on is Contin res Onmajor creation is Continuous On-Line Trading System (Colt). Colt tracks user trading positions in given securities and tracks their profits and losses. The Beacon package includes Colt features.

package includes Oolt features.
The ticker plant component
of the system is based on a software package called Market Access, created by Market Systems Technology, Inc. in
Boston, which is partially owned
to CMO Communications Inc. by CMQ Communications, Inc. "Market Access has cur

written interfaces for a variety of securities exchanges. Some ex-changes may have different pro-tocols. For example, some use bisynchronous protocols; others use asynchronous," Market Sys-tems' Stan Jackson says. After receiving the data from the dif-

receiving the data from the dif-ferent sources, Market Access puts the information on a single data stream, Jackson explains.

Now handling the some two million shares per day that change hands at the Boston Stock Exchange, Beacon is just beginning to show its vebeginning to show its ve-lue."The floor really likes it,

HOW TO GET SPECIAL PROJECTS DONE VITHOUT TYING YOUR STAFF IN KNOTS.

erupting the ed specia

e slightly over-tation is short and

r own people. And you don't e to divert your permanent sy mers, ope

Rent an Expert.

Optical 0 FROM PAGE 45

first significant shipments of erasable drives will begin in 1988, and by 1990 the drives will account for 68% of all read/write optical disk drives sold worldwide with less then IG-byte capacity, Disk/Trend said. Image-storage applications will generally use 5%-in. eraswill generally use 54-in. eras-able optical drives, and personal computers will begin using 34-in. versions of the drives, the re-port notes. Both sizes are ex-pected to relates tape drives as the preferred backup device. The number of vendors mak-

ing optical disk drives is also expected to grow from 21 in 1986 to 28 by the end of this year. Al-though nearly half of the 1986 sales took place in the U.S., non-U.S. manufacturers accounted for 92% of those sales, according Bright is a Computerworld sensor writto the report

DEC

FROM PAGE 45

pleased with the much better memory and the ability to ex-pand the machines. No other issues really came up. Meanwhile, the Microvo

III. said to use a CMOS-based microprocessor to at least dou ble the Microvax II's 0.9 mill instructions per second (MIPS) performance, is expected to be a main attraction at Decworld. "It's the worst-kept secret in the world," Isughs one DEC user. Many performance-hungry

Many performance-hungry DEC customers would like to see DEC introduce a new high-end system. "Our problems have outgrown VAXs," one scientist says. "If I want 40 MiPS, I'll have to buy from someone else

Announcing the biggest merger in the computer business.

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er of every your business.

As you may have guessed, though, this is no ordinary screen.

It belongs to the most powerful Sun workstation ever built.

Our new Sun-4/260, the first born of our brand new family of supercomputing workstations and servers. In computer-ese, it delivers the performance of 10 MIPS.

For the sake of comparison, that's as much horsepower as a minicomputer like the DEC VAX 8800.

At a tenth the cost.

Since there are those of you who are interested in such things, the reasons for this leap in price/performance include a host of technological advance-

performance include a host of technological advance ments, such as a full 32-bit RISC-based architecture and 128 Mbytes of main memory.

Best of all, it's available now—along with an aston-

Best of all, it's avai	lable
Software support for the Sun-4/260. Living proof it's no empty bas.	
Al Lonconstruction of All Lonconstruction of All Lonconstruction of All Longo Neighbors Small Administration of All Longo Neighbors Small Administration of All Longo Neighbors Small Administration of All Longo Neighbors Small Longo Neighbors Company Comp	
Graphics Modeling	-

party software support.

But we don't want to give the impression our new Sun-4 series is the only reason we can do what we do.

Merely the latest.

WE TAKE CARE OF OUR OWN.

The introduction of Sun-4 in no way means we're abandoning our Sun-2 and -3 customers.

On the contrary.

They're very much a part of our grand Open Systems Network design for the future of computing. Sun-2 and -3 applications are easily portable to Sun-4's and vice versa.

All three can coexist on the same network. And Sun-3's can even be upgraded to Sun-4's with a simple board swan.

What Sun-4 gives us is the broadest line of workstations in the world.

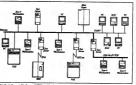
What it gives you is a compatible growth path to the most cost-effective and powerful workstations in the world.

And a way to get everyone in your company who should be working together, working together.

YOU'LL HAVE CONNECTIONS TO EVERYBODY IN THE BUSINESS

Only Sun has all the pieces of the Open Systems
Network in place.

Including an open architecture based on standards. Advanced network services. Across-the-board licensing of innovations and implementations.



"do Suith Hemmet Pile Speam (1925 ") med Suni, mit, everyone can access all the composer resources in the compo reas Affirms aproximg systems. Affirms suphruss; reas Affirms exemple, from PC 1 or manylymes. It's as shough respecy has but one composes. One composes with the power of many, And the annuals I belt composed.

Broad-based hardware/software industry support.

And a long list of network management services for

vendors and customers alike. Our strategy is paying off.

Together with the advances we've made in price/ performance, it allows us to build a network with the capability to include the greatest number of diverse computer systems at the lowest cost.

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It's one merger that promises to be good for everybody.



The Network Is The Computer

Processors

E w

A modular deskside image proc workstation designed as a peripheral pro-cessor to a Sun Microsystems. Inc. Sun-3 workstation has been announced by Vi-

R 0 D U

The Vicom-VME utilizes a 32-bit par-illel data bus, a 32-bit address bus and a control bus. The bus structure allows im-age memories, dedicated processors and nected. Separate the Sun-3 to be intercon isition, processing

modules for image acqui and display are offered. age processing algorithms are exe by sequence of point, ensemble and tions. The imple Unix 4.2 Sun OS as the operating system provides the user with high-level lan-

ages for algorithm development and ed proc sor cost The Vicom-VME costs \$48,000. Vicom Systems, 2520 Junction Ave., San Jose, Calif. 95134.

A universal small computer systems in-terface (SCSI) host adapter board called the VME-SCSI/U has been introduced

by Integrated Solutions, Inc.
The board is said to support any SCSI arget device that conforms to ANSI X3.121 and complies with the Common Command Set. It occupies one slot on the VME backplane and provides a maximum

data transfer rate of 1.5M byte/sec.
The Universal SCSI includes a 16-bit processor, an on-board 16K-byte data buffer memory and power-on self-test di-

The VME-SCSI/U costs \$1,795. Integrated Solutions, 1140 Ringwood Court, San Jose, Calif. 95131.

A 2M- to 16M-byte add-in men for use in Data General Corp.'s MV4000, MV10000 and Eclipse 5280 processors has been introduced by System Controllers & Interface Produ

Described as a plug-and-play emulator of DG's Universal Memory, the MV410 is availble in 2M-, 4M-, 8M- and 16Mbyte sizes with the starting memory ad-dress-selectable in 1M-byte houndaries via a five-position board-edge switch. Other features include a board-dese-

lect switch that removes the memory from the system and two LEDs on the board edge that indicate memory power on and memory selected. The MV410 is priced from \$3,000 for 2M bytes to \$15.900 for the 16M-byte

System Controllers & Interface Prodacts, 449 S. Beverly Drive, Beverly Hills. Calif 90212

Data storage

A magnetic tape subsystem designed to interface to Data General Com's Nova

ploys a cartridge tape drive that holds

4307 tape sub m. It interfa computer via DG's Burst Multiplexer Channel and uses a 24-track serpentine ng format with a recording density of 16,000 bit/in. The average data tra

er rate is 250K byte/sec. The Zip-12 costs \$15,395. Zetaco, 6850 Shady Onk Road, Eden Prairie, Minn. 55344.

Two bubble-memory cassette systems with 0.5M-byte Bubbl-Pac carridges, said to be direct replacements for standard 5M-in. Soppy disk drives, have been annuanced by the Bubbl-Tec division of PC/M, Inc.

The BDJ-1 Bubbl-Dek system fits the same mounting holes as a standard fill-height SVs. in Stopy disk drive, the vendor said. It provides two frost-panel tots for Bubbl-Per plays carringes. The BDJ-2 is a half-height unit that accumendates a single Bubbl-Per. All controllers for the Bubbl-Deks pro-

vide automatic error detection and cor rection and automatic retries for sof errors. They also provide built in self-test

The BDI-2 costs \$787. The BDI-1 ets \$1,291 Bubbi-Tec, 6805 Sierra Court. Dublin Calif. 94568

Two disk drive controllers designed for Digital Equipment Corp. Microvax, MicroPDP-11 and LSI-11 computers have been introduced by Distributed Logic

Corp.
The DQ246 controller can interface up to four storage module drive-type disk drives. The companion DQ256 can inter-face up to four SMD enhanced-class

Both products can reportedly optimal-ly fragment a record across multiple plat-ters and offer multipattern formatting cabilities. Each has a comm er capable of storing up to 21 seek The DO246 costs \$2 250 The DO256

costs \$2,850.

Distributed Logic, P.O. Box 6270, 1555 S. Sinclair St., Anaheim, Calif.





BASIS ENABLES TEXT AND DATA RETRIEVAL FROM A GROWING WORLD OF INFORMATION, SHIPLY, QUICKLY, EFFICIENTLY,

Eclipse and MV processors, has been introduced by Zetaco, Inc.
The Model Zip-12 subsystem em

630M bytes of data when formatted under DG 4307 software parameters. It is said to back up about 10M bytes of data per minute using standard DG backun utilities, and it can be preset to do backup The Model Zip-12 runs under DG's AOS/VS operating system, emulating a

Terminals

A Digital Equipment Corp.-compatible terminal that can be connected to two hosts for simultaneous operation has been amounced by CIE Terminals, Inc. a subsidiary of C. Itoh Electronics, Inc.

subsidiary of C. Itoh Electronics, Inc.
The CIT310 provides instant on-line switching between hosts. In dual-session mode, the screen can be split horizontally. Each host can have an independent screen

display of 24 rows.

Other features include 1K byte of non-volatile function memory per session, allowing 180 programmable functions accessible through 45 function keys, and separate set-up memus for each assion.

The CIT310 costs \$749.

CIE Terminals, 2505 McCabe Way, Irrine, Calif. 92714

A point-of-sale (POS) terminal called Datalink II has been announced by MSD Systems, Inc.

The terminal was desined to interface with computer systems running POS applications software. The terminal contains a standard electronic cash register keyboard, a receipt printer, a CRT and support for up to four cash drawers.

The Datalink II can also function as a

The Detains! II can also function as a imple stand-alone cash register it hast computer becomes inoperable. In stand-alone mode taxes are automatically calculated, 10 departments are supported, there are five tenders and reportprinting data is captured. Datalink II features four RS-232 serial ports that operate at 150 to 19.2K bit/

sec. The terminal costs \$2,695.
MSD Systems, Suite 206, 10031 Monroe Drive, Dallas, Texas 75229.

rinters/Plotters

A printer said to combine bar code, labeling and demand document printing capabilities has been announced by Facit.

bilties has been announced by Pacis, Inc.
Called the Documete 3000, the 200 char/sec., 80-os. matrix printer can print 11 ber code combinations, any type

of label and forms consisting of up to six parts.

Fonts are contained on a play-in font card and can also be down-line loaded. The Documate 3000 in priced at \$1,495. Facit, 9 Executive Drive, Merrimack,

N.H. 03054.

A printing system designed for use with the IBM System/34, 36 and 38 and fea-

turing a 20 page/min. laser printer with duplex capability has been announced by General Business Technoloy, Inc. The 6637PM printing station offers a print resolution of 300 by 300 dot/m. It features dual 250 does not seem to the statement of the seem of th

rint resolution of 300 by 300 dot/in. It atures dual 250-sheet input trays that copt 8½-by 11-in. paper. The user can select from 34 resident

The display station, called Model 7710DS, features a 14-in. display in green or amber and a 122-key keyboard

with 24 command keys, according to the vendor. The 6637PM is priced at \$27,670.

General Business Technoloy, 1891
McGraw Are., Irvine, Calif. 92714.

Printer Systems Corp. has introduced
the Printmate Coax and Printmate
Twinax, protocol converters designed to
provide communication with IBM com-

provide communication with IBM computers.

The converters feature cartridges that contain upgradable emulation software

contain upgradable emulation software specific to individual printers.

The Printmate Coax emulates the IBM 3287-2 and 4214-1 dot matrix printers and the IBM 3262-3113 line printers.

nd the IBM 3262-3/13 line printer.

The Printmste Twinax enables comnunication with IBM minicomputers.

The Printmates cost \$1,495 each.

Printer Systems, Suite 100, 1485 Chain Bridge Road, McLean, Va. 22101.

An optical character-recognition page acanner designed to process various page formats, including documents with both text and graphics, has been announced by Recognition Equipment, Inc. The Tartan XP90 system, which in-

chodes x Tartan XP90 scamer and an REI IBM Personal Computer XT-type system, processes print or type in most foot sizes, styles and formats. It captures a brimapped image of the document at a rate of 100 char/shes. and converts text to AS-CII characters at a resolution of 300 dot/ in.

Users can define up to 256 data-cap-

ture nones per form, alpha and/or numeric nones, English or structural context and fixed or variable pitch. Also included is a 70,000-word dictionary. Density can be aciected, and a document can be rotated. The Tartan XP90 system is priced

from \$80,000.

Recognition Equipment, P.O. Box 660204. Dallas. Texas 75266



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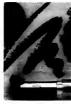


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Information Dimensions, Inc.

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that There's permissional open often has been without provided the provided that the



KAYSER-ROTH DID

A Amorbia terroll larger menufacture of honey for man of women, Kayawa Foth understands that export is a Kry Thank why they stated the Colline of the Collin

its goals.



DIGITAL DID.

Digital Equipment uses Califices refevente to disturbine Dispositions. That vious of the highest compliances they could be being the properties of the prope

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LHTEC DID.

The Light Helicogram Tuthers Engine Company (LHTEC) did not cents as an entry und the U.S. Army summed as received and the U.S. Army summed as more than the U.S. Army summed as the U.S. Army summed access to vital information simultane-ously. And Cullinet managed to deliver up to 70% more savings in day-to-day operational costs than any competitive vendor LHTEC considered.



TECH FORM DID

Tech Form Industries makes tubular exhaust components for automotive production. And when they needed a repetitive manufacturing system coupled with an automated release package, an exhaustive search led them to Guillaners Repetitive. otive prod search led them to Culliner's Repetitive Manufacturing System. This on-line, closed-loop, MRPII System software runs on VAX as well as other department alplatforms. Because of its exceptional automation of workflow and documentation, it is helping TPI meet the growing needs of original equipment automation eneeds of original equipment automation emanufacturem around the world. Timely information of the property tion turnaround has given Tech Form better tracking of investment balances. They can interface financial reporting with shop-floor data reporting systems. And because it's a stand-alone, in-house system - not a tie-in with an outside mainframe - it lets TFI realize the tremendous savings inherent in de partmental, one-site computing. TFI products contribute to the performance of scores of domestic and foreign cars and trucks. And Cullinet's Repetitive Manufacturing System is helping to keep the company on the road to greater profitability.



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then LXN to other systems. A MS-DOS file server provides availability benefits of LXN to PC users.

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Endem is the first to bring OUTF features to (NUX in this price range. The system can support two mirrored disks if one fails, the other takes over. In case of power failure, an uninstrumptible power supply will run the entire system for up to the mirrares. It will also send everything in memory to disk. When power is restored, and nestant resumes where you left off, maintaining data integrity.

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Now you can run your UNIX applications and access the Tandem OIITP network—all from any workstation. The power comes from a 32-bit microprocessor his backed by a 1.6 megabyte floopy disk drive, 80 or 170-megabyte hard disk storage

and a 60-megabyte streaming cartridge tape drive.

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As you add users, add processor and memory boards. in a fully configured system, memory can expand to 16 megabytes, with 510 more megabytes of hard disk storage. LXN can support up to 32 users and take a huge workload off your mint or mainframe.

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EXECUTIVE REPORT

OPTICAL DISKS

Optical products inching their way to market reality

BY BARBARA SEHR

figures already indicate that the CD-ROM data base is having its of the revenue in Hill's depart-ment, that figure is now down to about 2% of revenue. "I have no ins to go back to time-shar-t," Hill says.

Hill is a pie rid of optical technology. But e he and other pioneers on a dission course with market rety, or are they the forefathers make its move — standards, software and user security permitting.
In fact, there is no shortage of

dIS interest in optical storage. Because of an explosion in graph-

Sehr is a free-lance writer based in



The navigational maps po-lished by Jeppesen Sunders

Documents on disk: Are they legal? Interview: Imaging pioneer Bill Hooton

CD-ROM standards under control

tic media is stretched to its limits. One user facing this crisis is Gazy L. Porter, systems ana-

jor, some with minor changes. Today's optical storage is not le: Once a laser image is But, be says, an even larger lock hars the technology's progress. There is a decided lack

plication potential. Indeed, up forecasts than shiny disks is not a technological revolution in the same sense of word processing systems replacing type-writers," says Richard Fisher, an independent consultant with Kalthoff-Fisher Associates, Inc. in Santa Clara, Calif. "This is an additional option that won't re-

Optical technology can be di-ided into three categories. dost attention in the last year has focused on CD-ROM, which has thrived primarily at the personal computer level as a multimedia storage device that com ements, rather than replaces

Inching FROM PREVIOUS PAGE

ting PC storage periphera Write-once read-many (WORM) disks, on the other hand, are emerging as alterna-tives both to the image-storage capabilities of microfiche and microfilm and the archival storage netic tape drives. A greater threat to magnetic storage, however, is erasable optical diaks, which are still in the develent stage. Most observers o not expect this technology to be available in production quanti ties before 1990.

CD-ROM off the ground CD-ROM technology, boosted by the explosive popularity of its dio parent, appears finally off e ground floor and ready to lead users down the optical path. CD-ROM disks are made of reflective metal, which records information in digital form, cre-ating a series of microscopic pits and adjoining spaces arranged in spiraling tracks. Each disk contains 16,000 tracks per inch, and each disk is approximately 415 inches in di

Despite its large storage ca-tabilities and the joint marketing and development efforts of two of the word's largest electronics manufacturers that developed CD-ROM — Sony Corp. and Philips N.V. — the technology did not win instant acceptance by users. In its early years, from around 1983 until 1985, CD-ROM was like the high school to ask out for a date.

wever, once users di ered that this attractive pheon had a personality, its dance card began to fill up with applications and new ideas. For instance, MIS and PC managers are finding that CD-ROM pro-vides a means of distributing 600 million characters of data ivalent to 175,000 pages of ASCII text, plus indices - to any end user with a microcom-

Whereas today's average PC

outer and a \$700 drive.

EXECUTIVE REPORT

Optical storage technology tree

cel duks are the most mature of the three types of optical storage, CD-ROM, erapoble disks are the most siable technologies for MIS/DP applications



Selected optical product implementation forecast

Product (gire		NO.		2					8	
Digital videodisk		*	*		*					Г
CD-BOM	П	糠	m	I.	TA.		食		獭	9
CD-P					*	*	*		*	
Optical ROM					*	*		4	諰	æ
Write-ence optical disk	*			*	*		*			
Smooth optical "			*	100		*	8		Ŕ	ı
Hard-disk cartridge	+		+	*		+				Г
Compact disk/read-only Compact disk attention			'84	'85	'86	'87	'88	'89	'90	75

ccess memory is about byte or less. CD-ROM one megabyte or less, CD-ROM can expand ROM available on PCs to more than half a gigabyte. ith the ROM supplement, ap-cations once unheard of be-

me a strong possibility.

Already, Microsoft Corp. has troduced Bookshelf, an on-line reference source that, on a sin-ele disk, includes the contents of major reference works, includng a national ZIP code directory. rtlett's Familiar Quoi tions, a thesaurus and a manual of style. Other on-line reference facilities in the works from other vendors include a medical refer-ence guide for physicians and a legal precedence guide for attor-

CD-ROM's focus has turned away in the past year from the dias and graphically enhanced video games. In the corporate world, the technology has set its this, the technology has set its fits on converting on-line data ses to CD-ROM. Currently, set of the data bases converted have been volumes that are less frequently updated, such as biannual catalogs, quarterly financial

formation and the like. But even with these m applications, growing up hasn't been easy for CD-ROM technology. According to Ed Rothchild chairman of San Francisco consulting and market research firm Rothchild Consultants, CD-

ROM shipments dropped to 8,000 units in 1986, compared with 12,000 shipments in 1985, probably due to confusion about the technology. However, Rothchild says the tide has been stemmed by standards developments (see story page 67). His

organization recently increased this year's forecasts of 25,000 units shipped to 38,000 units. And as shipments have gone up, prices have come down. CD-ROM has already experienced the beginning of a price decline as the technology begins to maare (see chart page 58).

Lower prices notwithstanding, the lack of standards has been a major hurdle on CD-ROM's acceptance track. More than any other optical technol-ogy, interchangeability is critical to CD-ROM. Fortunately, the largest manufacturers of CD ROM players, media and soft

ware — as well as some infl tial obs tial observers - convened at Lake Tahoe, Calif., to develop what has become known as the High Sierra standard. The result is a disk format that can be played on any CD-ROM player, just as a compact disk can be

This means that people like Hill will eventually be able to publish a Dun & Bradstreet data ase that records the spending habits of consumers in a particu

the manager of the local K Mart or the national advertising man-ager of Proctor & Gambie can access the data at his own cor nience and at his own rate of speed - without worrying about running up on-line costs The disks can be distributed through the mail — like a floppy disk — and at far less cost the the weighty printed manu that once held the data base.

WORMs In theory, WORM disks feature removability, ruggedness and massive data storage capacity

The IRS is asking the question: Is seeing believing in courts of law?

ceptable as evidence m a court of law? It may not seem a critial question today, but interest in the legality of optical storage of images is likely to accelerate in the next few years.

According to a recent sur vey done by Richard Fisher, an independent consultant who erformed the survey for The Yankee Group in Boston, be-

iging installations exist toer projects that ther will increase about 75% per year, which he says "may not sound like much com-pared with the 100% and 200% growth once experienced in the personal computer market, but it is still quite healthy."

And according to Frank
Moore, chief of the Laser

nation Systems Develop-

ment section of the Internal Revenue Service in Fresno Calif., the legal issue is one of the more important ones to be red before the IRS's op-

tical disk program is expended. To date, there has been no court ruling on the legality of images stored on optical disks. However, Moore says, the IRS has received general assurance from its own legal counsel and the U.S. Department of Justice Technology Center at the In-

disks fall under the provisions of the Uniform Paperwork Act. Accordingly, the National Archives, responsible for paper management within the federal nent, has authorized the IRS to destroy original returns when images have been stored on optical disks. Moore emphasizes, however, that no original returns have been de-

royed in the pilot program. The opinion of the IRS legs The opinion of the IRS legal counsel conforms to the belief of Robert S. Williams, president of Cohasset Associates, a Chicago management consuling firm that deals with record management. Williams is about to publish Legality of Optical Storage, a book that explores the legal considerations of opti

Williams says a "very good case" can be made for the ad-mission into evidence of images stored on optical disks, just as evidence submitted on microfilm and computer printouts have been admitted in pre ses. Williams adds that it is

rly for a court test Only one state, New Jersey, has so far considered any legis-lation specifically outlining guidelines for the adminsibility of optical disk images. The bill introduced in the 1986 session of the New Jersey legisla has not been adopted into law todate. Williams says

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Typical turnkey optical filing systems The characteristics of optical disk-based filing systems pary widely

	Tab Products Co.'s Laser Optic 2500	Tab Products' Laser Optic 1000	3M Ca.'s Documen 2000	Filenet Corp.'s System	Laurelete, Inc.'s Laurence	CIE Systems, Inc.'s Optical Filing System	Cenen U.S.A., Inc.'s Cenofile 5500	Fuji Photo Film U.S.A., Inc.'s OD System	Minolla Corp.'s MIIIMS	Philips N.V. Magadoc
Disk size (disputer)	12 in.	514 in.	12 in.	12 is.	12 or 5% in.	12 in.	8 m.	8 in.	8 in.	12 in.
Disk capacity (page images)	60,000	5,000	60,000	45,000	Varies	60,000	33,000	15,000	15,000	45,000
Scanner resolution (pixel/in.)	200 cr 400	200	200 cr 400	200	300	200 cr 400	200, 300 or 400	200 or 400	200 er 400	200
Maximum document input size	B4	Legal	A3	B4	A4	B4	A3	A3	A3	A3
Scanning time (A4 page)	5 sec.	12 sec.	3 sec.	4 sec.	5 sec.	5 sec.	5 sec.	6 sec.	3 mc.	5 sec.
Microfilm scanner	No	No	No	No	No	No	Yes	Yes	Yes	No
Video resolution (pinel/in.)	200	100	200	100 er 200	150 er 300	200	200	200	200	200
Video display size (diagonal)	15 in.	15 in.	17 in.	20 in.	15 in.	15 is.	15 in.	15 or 20 in.	15 in.	15 in.
Printer repolation (pinel/in.)	400	200	400	400	300	400	400	400	400	200
Printer output (maximum document size)	B4	Legal	A3	M	A	B4	A3	A3	A3	A4
Jukobox retrieval unit	Option	No	Feture	Yes	No	Option	Option	Ontion	No	Yes
Availability in U.S.	Now	Now	Now	Now	Now	Now	This year	Uncertain	Uncertain	Webdrawn

Inching

FROM PREVIOUS PAGE capacity within a small form fac-

tor. Even the 12-in. optical cartridges require only a fraction of the archival storage space taken up by the standard 10-in. mag-netic tape reels. They do not have to be threaded and can be intained under less than ideal computer room condi-

Recording on WORM disks does not require special ma ing procedures, as CD-ROM does. There are several record ing technologies, but most involve a laser burning pits into thermally sensitive recording material. Information from video scanners, keyboards, optical character recognition equip-

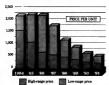
ment and other devices can be corded on WORMs.
While more sophisticated

their magnetic cousins WORM disks do not enjoy the fast access time of magnetic media, and users are very much wedded to their tape libraries. ome users may balk at a 100- to 200-msec access time, having been accustomed to access times

between 17 and 50 msec for agnetic media. However, for someone like Charles Plesums, acting director of systems research at the Unit-ed Service Automobile Associa-

tion (USAA) in San Antonio, the access time of optical disks can be an advantage. The USAA is a national insurance company that underwrites the automobiles of military officers.

CD-ROM drive price forecast By 1991, CD-ROM drive prices should plummet to \$500 or less



Until recently, correspondence between the insurance company and its clients was stored on microfilm. "There is quite a difference between searching 100 msec for something on an optical disk and sev-eral bours of searching through

microfilm." Plesums says. Legal requirements force insurance companies like USAA to keep all correspondence regarding a claim in storage for many years. The combined graphics images would take up far too much space on magnetic disk or tage. "There is no other alternative for us than optical storage,

That is the price? While optical disks rep

major savings to storage-inten-sive applications like Pleaums the initial cost of WORM sys tems and media also represents key considerations that deter-mine whether the technology can meet its full potential. Today's WORM systems can cost anywhere from the \$6,000 system integrated into the PS/2 to the multimilion-dollar levels of custom jukebones.

Price, however, may not be a rier to a huge corporate institution seeking record manage ment savings, such as the Internal Revenue Service. In fact, Rothchild Consultants has estimated that the cost per megabit for a 12-in. WORM disk is only a penny, half that of 6.25 bit/in. gnetic tape reels. It is, hower, 10 times the cost per megabit of microfilm, according to a Rothchild purvey.

shent of magnetic drives today.

Shipments of 54-in. WORM disks alone are expected to exceed 25,000 units this year, while 12,000 12-in. disks are forecast by Rothchild. This rects the sharpened interests in WORM disks as a result of document-imaging applications like the USAA's and one in test mode It has been four years since the first WORM drive rolled off at the National Archi the production line at Storage story page 63). Office automa

Technology Corp. in Louisville, tion specialists see great noten Colo. According to Rothchild tial in the enormous capacities sultants, there were only available within a single optical disk and the huge jukeboxes al-ready in service. Fisher esti-13,500 drives shipped world wide between then and the end

mates that the document-imag

of 1986 - a figure that would Optical drive* market forecast The optical drive market should zoom to nearly one million units skipped by 1991

M NUMBER OF UNITS SHEPPED

CW CHART

rdly represent a day's ship-

ment of magnetic drives today.

ing market will grow from shout \$100 million this year to \$1.25 billion in 1990. "That's not ex-plosive growth in PC terms." plosive growth as a Fisher says, "but it's nothing to Most of the document-imag

ing systems use jukeboxes with more than one optical platter. A jukebox is a rack system similar to the disk packs of another time that could allow several hundred Continued on page 62

New toy: Even the military is training with videodisks

BY IANET FIDERIO

The med students gather around an IBM Personal Computer AT equipped with hard disk, bouch-acreen monitor and videodisk player. An image of a patient being wheeled into an emergency

It is up to the students to provide acute are for the patient and stabilize his con-

care for the patternt and stabilise has con-dition. By touching the screen and choco-ing items from a menu, they gather in-formation and direct treatment. Suddenly, however, the patient's condi-tion worsens, the students watch as the patient slips into shoch — a result of

patient migratum about — a relate of their mindingments.

The Chinical Simulator System described above, created by Intelligent Images, Inc. in San Diego, in one of a new category of training products that combine optical technology — namely laser-imprinted videodisks — with sound, PCs, color monitors and a sampling of comput-er-assisted instruction techniques.

er-assized instruction techniques.
The products are designed to be inter-active and to provide feedback. For exam-ple, the Clinical Simulation System not only recreates emergencies; it then re-cords student actions as they respond to ituations. At the end of each acute-care ulation, students are provided on's sequence and time of actions. The stem will tell the students what the correct diagnosis and treatment plan should have been and, if requested, compare what the students spent on medicati oratory tests, X-rays and so on with

Not a flash in the pan intelligent images, and vendors of similar systems that address the industrial, tech-nical and MIS markets, is betting that tese products are the answer to our rednical training needs. And the market tocurical craming needs. And the market figures seem to agree. According to Rock-ley Miller, editor and publisher of "The Videodisc Monitor," more than 111,000 industrial videodisk players have been sold into the U.S. nonconsumer market. One-third of these systems are found in One-flurd of these systems are found in the industrial training arena, and about half of those are used solely in the auto in-dustry. Another third are scattered across medical, government, military and other education markets. Nearly all of the

and arcases.

One major indication of this market's shility is IBM's recent arrival, with its to Window hardware package. In typical M fashion, Miller notes, 'IIInfo Winwi] has provided stabilisation among

software support tools — the vast major-ity of the authoring packages that are Yet another indication that the n is more than just a flash in the pan is the U.S. military's interest in the technology.

in one of the largest videodisk contracts to date, the U.S. Army recently signed an agreement with Matrox Electronic Sys-

tems, Inc. in Montreal for 47,900 electronic information delivery systems.

In the industrial and DP corner, videodisks are also making an impact. At 3M Corp., five interactive videodisk systems provide technical training in electronics, nath, robotics and hydranics — while in

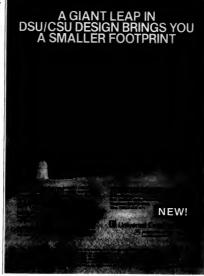
rs can whit through the lessons, having a bit more difficulty can take time. "The important thing is that iovees] obtain the tools you want

tive video as a supplement, not a replace-ment, for stand-up training. "Adulta are more comfortable with the self-paced (vi-deodisk systems) than with the classom, because they aren't in a situation ore their peers are chiding them. Also, hey are having trouble understanding

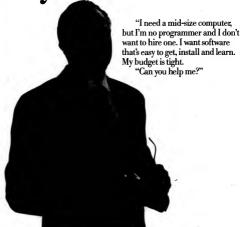
notes that MIS should not on ok the fact that some of the most exten-

active video systems deal with fairly bility of this type of courseware the kind that can bring people in and get the land that can bring people in and them up to speed on new system coul rations or software — could prove t extremely valuable," Miller says. "Videodisk is the newest toy for m MIS people," adds Margaret Sulli president of Practical Training Soluti

nc., a Chicago-based consultancy. There is an entertainment factor with video that you don't have with oth forms of training. In terms of actual training effectiveness, most of it tends to come with the entertainment value — the more



Why IBM has a full



Like the north and south poles, people who buy mid-range computers can be alike, yet opposite. Their needs may be worlds apart, but each asks,

Their needs may be worlds apart, but each asl
"Can you help me?" And IBM answers, "Yes."
The fact is, IBM can help more kinds of

The fact is, IBM can help more kinds of customers, more ways, than anybody. We offer an extraordinary range of computing power, and all of it is available to any of our mid-range customers.

But there's one thing we don't have, and neither does anybody else: a "one-size-fits-all" design that can satisfy everyone without compromise. The needs of a small law firm, a retail chain and a multinational corporation, for example, are too diverse for one architecture to serve each equally well.

So IBM offers a choice of mid-range systems, System/3X and System/370. Neither is "better" than the other, they're just better suited for different kinds of jobs. You may even want both.

And since we give you a choice, we'll help you make the right one. Together, we'll analyze your needs for software, connectivity and training. We'll look ahead to future growth, and we'll work to protect your previous investments.

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The System/3X family includes the System/36 and System/38.

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"I'm building a network of mid-range computers in 37 remote locations connecting with 12 mainframes in 5 other places. I'll be sending both data and mainframe applications. My growth ceiling is pretty much unlimited.

"Can you help me?"

extremely connectible. So a larger business can build a network of System/36s, or include them in existing networks with PCs and mainframes.

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The 9370s are surprisingly compact, yet they not only connect with IBM's biggest mainframes and other systems (through a variety of networks), they

can run thousands of mainframe programs.

For sending mainframe power out to departments, or for communicating between departments, 9370s are a terrific choice.

IBM's new 4381s bring similar benefits, plus additional ones: added performance, added growth, and the ability to run MVS/XA, the most powerful IBM mainframe operating system.

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But regardless of architecture, the most important considerations for any system are the people who'll be using it and the challenges they face. And that's why IBM's full-range mid-range is the right idea. No matter where you === fit into it, the fit feels good.

Inching

optical platters to be mounted into a rack that is hooked into a single controller. The result is the hundreds of gigabytes of storage capacity required for the storage of graphics images.

Document imaging is simply the preservation of complete

documents in which graphics and text are digitized into machine-readable form that can be re-called on a high-resolution VDT. Until the entry of the WORM disk, microfilm and microfiche provided a state-of-the-art alternative to storing reams of paper documents. The primary draw-back of microfilm, however, was its time-consuming sequential,

rather than ran

Even the relatively slow random access of WORM disks appears superior when compared with a search through reel after reel of

— all paper intensive es — are the primary targets for document imaging on optical disks. According to Fish-er, the most important develop-

sologically sophistics personnel to the evaluati testing and application decisions surrounding the use of docuthe optical storage systems and the high-resolution terminals necessary for document retriev-

USAA's Ples had the time and responsibility to experiment with new ways of solving old problems. Unlike some users, be had the technical ability to enhance raw products still in their infancy and provide

uner input. In 1986, Plesums had a tur In 1986, Piesums had a turn optical disk system from Filenet Corp. in Costa Mesa Calif., installed at USAA head quarters. The system, which cost more than \$500,000, fea tures a jukebox with several hundred gigabytes of storage capaci-ty. The system also features removable disks that can be stored until needed — for exam-



pie, when a custor needs to be checked.

"Instead of having to get back to a customer perhaps the next day with requested information, the operator can access the in formation in seconds and give the answer right over the

No match for IRS

No motch for IRS
while Pleasum's paper congestion problem would seem lauge to
most users, it is no match for Uncle Sam's own IRS. Frank
Moore, chief of the Laser Technology Center at the Information Systems Development Development to
the IRS, says that more
than 1.5 billion documents are
currently stored in IRS files, at a
total cost to the enveryment. currently stored in IRS files, at a total cost to the government of some \$40 million so far. The congention arises because federal law mandates that the IRS keep originals of forms such as the familiar 1040 for various lengths of time. For example, while personal income tax forms must be kept for a little less than arises. West of a little less than arises were corrected. seven years, corporate income tax returns must be stored for 75

In a pilot program at the IRS service center in Frean, Calif., a couton-designed set of three jakeboxes with WORM distatement of digitally scanned taxony of the completed of toring up to 600 bytes of digitally scanned taxony of the couton of the couton in own the couton taxony taxo system in up and the line price for a closer look, they can be accessed in as little as 30 seconds, where once Continued on page 64



INTERVIEW

Archiving the Archives

With space at a premium, the National Archives is installing a videodish image storage and retrieval system "to store, maintain and make available to the public the records of the federal government."

According to Bill Hooton, director of the National Archives' optical digital image project, the archives' charter reads, "To store, maintain and make available to the public the records of the federal government." With hundreds of thousands of such records, that's a tall order to fill.

Hooton, 36, started in DP at the Internal Revenue Service in 1970, became interested in videodisk for image storage and retrieval and eventually de-signed a paperless IRS using op-tical disks. After that ambitious trial project was under way, he moved to the National Archives as part of its high-tech task the test system that will put th fragile 19th-century per documents of Tennessee's Con-federate soldiers into an ontical storage system put together by Unisys Corp.'s System Develop-ment Group. Hooton, who is also chairman of the Digital Image Application Users Group, spoke recently with Kelly Shea a Computerworld assis tor, about the nuances of the Ar-

What needs will an optiimaging system fill at t National Archives? The bispest need is that we

chives' system.

The biggest need is that we're completely out of space. So we either have to build a new building and/or we have to do something with the existing apace.

Number two is a real preservation.

varios issue — we don't want to handle those original documents. It's also a real pain in the neck to yo get at the information — of course, any kind of manual flining system would be, especially in terms of the six or seven billion page images of permanent records that we have. And those are the ones we have to keep for ever. We have about 15 billion; if

you count everything.

So those are two issues, and of course, trying to automate the retrieval is another one,

When this system is up and running, will you put as many documents as possible on it? Well, not necessarily on this system. This is really an isolated system, intended to be a research test bed. That's why it's so flexible. If we went with a much larger system, we would explained in the system of the system of the combable reducion it.

How many users will be oble to occess this system? At one time, we'll have four pure retrieval terminals, with the possibility of shout eight, because any of these high-resolution monitors — which are also used for quality control and indexing — can be used for anything else. They're strictly controlled by the user profile on the passwort.

Herve you followed the traditional roles of DP acquisition with this system? On yes. There is only one benefit to doing a research test as opposed to a pure production DP-type of an operation, and that is that you don't have to do a consideration that the you don't have to do a consideration that you don't have to do a consideration of the things in the consideration of the things to get that information trying to get that information.

Have there been any major problems so far? When do you plan to have this test running?

The date right now for installation completion is Dec. 7. I espect it will be before that. Everything is going extreme-

ly smoothly, much more smoothly than anything I've ever been involved with. This is a \$1 million system.— actually it's a \$4 million system, but we paid \$1 million for it because it's advertising for Uninys.

I think the reason things are going so smoothly is that Unisys realizes that they'll either get \$30 million worth of advertising if it's a good system, or they'll have to close their doors if it's a bad one.

I'm in a position to tell the world, and I plan on telling the world. So they're working devisibly hard to try and make it a beautiful system. They have done that, and things have been on time, and it's really nice of ir. I reserve the right to change



National Archives' Hooton How will MIS shops interface with such systems?

That is by political problem then edyn. It was his political insue originally at the IRS, because they're got shape De division nationwide — we're talking thousands of people. At the IRS, people didn't know where the system fell. Was it is the management systeme? Was it a DP system or the country of the c

on then everybody wanted it.
Uners don't usually want to
the third type of procurement
through the normal, lange IP or
spinishing the continue it doesn't get
done quickly. It gets put in with
all the other thousands of preects and doesn't go anywhere. If
it is legs on the user side, drives
by the user side and looked at an
other side of the continue of the continue of the
much faster. So that is where
people are opting to try and put it.
But more and more now I see

that it's going as normal DP. Do you think that that's better? Should it be under the guise of MIS? Oh I don't know. It all depends

the guise of MIS? Oh I don't know. It all depends on whether it's going to be integrated in with the existing main-

frame; if so, then it really should be under DP. If it's a little standalone, office-size thing, it should not be under DP, I don't think.

Will the Archives' system eventually be integrated

Well, right now we don't have DP, We don't have nerything like that. We've got a few people, we've got some small branches and things like that, but we don't really have a large organization. We are trying to recorganize, and eventually we will probably have one giant DP group like everybody she does. But right now it not a problem. Everything's just being run by this small, high-clean being run by this small, high-clean

A lot of people say that this is a technology looking for a market. Is it? I think it was always a technol-

own in was away technicopy looking for an application.

And I think that users now can
look at those test pioneers who
took the ball and ran with it at
the beginning and asy, "Look, it
really did work. We don't have to
go with some kind of test system
for our application. We have a big
application, and we can go with a
production system." And that, I
think, is what's going to turn it
around. So it just took time. It always takes time.

Inching

it took six weeks of rummaging through files. It also means, according to Moore, that taxpayers with a question about a return filed years ago can have their queries answered in a much faster time. Moore says the present system "can retrieve 30% of the 1.5 billion documents now in

storage in Fresso."
The IRS's decision to go with an optical disk system was made in 1984, when the technology was still relatively new. Since then, Moore sotes, there has been quite a bit of progress in optical disk technology. Data throughout times have increased, across time is improveng, and the retrieve the images is on the decline. The Fresso project remains a pidst prompt however, and "there is no indication that its systems will become part of a com-



plete system in the future." Moore says.
Systems such as those custom-made
for the IRS and USAA were designed for
highly sophisticated users. As a result,
very little emphasis was placed on creating operating and applications software
that is entirely user-friendly. Plenause,
however, says even his custom system
does not pose a major training problem for
personnel assigned to its operation. "It's
not hard it's just different, "In easys.

But for most future users of optical systems, a user shell all reflicit applications that reflect the write-once laminations of today's WORM disks are key requirements. In fact, software is a barrier even more critical to WORM technology than standards. The notivare problem with optical disks comes into pay in the relationship of the optical drive to the operating systems.

Since operating systems were designed with magnetic disks in mind, the operating system has a tendency to ward to reuse disk specific properties on a WGMM disk. This must be overcome with oftware that makes the WGMM disk transparent to the operating system. A summer of systems to mamber of systems bouses working with various CPU have developed intifurure to overcome operating systems, including overcome operating systems, including the systems of the system of the systems of the VMS But more must be done to create reasonance guise reliable.

rasable disks

Most crassible disks are recorded using lasers to beat magnetized areas coated with various metals. The magnetism provides polarity in the sections, which can then be read with another laser. Data is

WORM standards debate breeds world of confusion

How important are standards? If you own a Betamax or an eight-track tape player, you may have already discovered be importance of standards in a media that must be interchanged among many users. Unlike compact disk/read-only memory technology, however, in which interchange in a key to the success of a disk, the interchange of write-once read-many (WORM) disks in not always.

"The need for standards] simply depends on whether an application requires the interchange of media," saya Richard Fisher, an independent consultant with Kalhoff-Fasher Associates, Inc. in Senta Clara, Cald. "In most of our application, we have discovered that only a small minority of suers requires interchange." Before the stream of 54-in. WORM disk introductions began in 1985, there was little concern for standards in the 12in. world. Optical disks were rare and expensive, and customers generally did not require interchangeability. Standards are not as important to our application as a reliable second and third source of media," sury Frank Moore, chief of laser technology for the document imaging pilot project within the Internal Revenue Service in Frenon, Calif.

A second source of media is usually required by any systems integrator putting together a jukebox or other optical subsystem. In this way, optical disks are no different from a new semiconductor chip or a new form factor for a magnetic disk

While Charles Plesums, acting director of system research for the United Service Automobile Association in San Antonio

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ware and applications that are inevitably in your future.

Coose the storials that will profe you the include later mading/free more faceral or moring and one after-more faceral?

9.15 a.m. - 12.20 y.m. graper, reviveded and co

P.18 a.m. 1.2.99 p.m.
T.1 Introductions to CP-2004 Industry,
Market, Fetame In proceedings of the processing of the proc

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eculities.
T-3 CD-80M Technology: Hardware This sensor covers the equipment technology side of CD-80M, in the context of information sticingle sub-systems sociating magnetic storage, opical docu, enable.

include laser reading/recording method and meding and entire checking/comed Direct topics will include standations, ganged, networked and catendar open timplementing suiti-drive, engineers and praisions, including interface and service quintions. Feet Technically and producgaments. Feet Technically and produc-

persons. For: Technically and productoccurd professionals interested in a sysrum-level understending of CD-ROM. [4 CD-ROM As As In-House Publishng Application.

iny of CD-ROM as a replacement for paper and microfilm/fictie methods of publishing cassings, parts lists, service and software manusis, discretories and distributes of all some Alembers will electual questions of microfilm and control of the microfilm of the m

1:36-630 p.m. CD-ROM Technology: Sultivace

is ansation will look in ortial at each step CO-ROM usage via software, beginning in the user interface, indexing techques, miniection with applications softer including MS-DOS Extremions, and plications of standards issues (i.e., file main. High Servis, and others). Discusriam. High Servis, and others). Discus-

sions will include problems of off-CD-ROM use of data and anauthorized reproduction Part Protessionals interested in the effect of software on the flow of information from dire to application.

on nonserve the test of sectoration in the to application.

T-4 Authoring Systems Wortshop Pregister for this sension for detailed cap sure to the tools needed to create the C RCM database, starting with a mane of d and ending with a smaller application. It will beam about permanetries, mariering and service/regispenera/programming and creaters. Includer alternatives such as

and service/equipment/programmingproaches, including alternatives such house and out-of-house consultants a turnity suppliers. Pern Professionals expected responsibilities for manager RUM product development. T-7 MSS Applications for CD-ROM and Optical Memory This session examines where CD-ROM This session examines where CD-ROM

with CD-ROM's salability for different of distaleases, including financial and sumerical bases, with attention to a teraph, speed, frequency of access, scheduling, security/integration and requirements. Discussions with also in networking of drives, personal costs and other workstations/main/names. AMS-experienced and systems/datab

T-8 Using CD-80M in Expert Sy The massive storage potential in CD slong with its low cost and reliability possible advanced expert or artifeir gence applications tragging from set or straticine to noise-situations weak

cy medicine to point-disales netal. I sension will introduce some of the agtions and the problems providers fac CD-ROM equipment in public or seve environments. Then Professionals who with intelligent, educational, or decis support systems and who plan to use ROM erchotosies. shares the IRS's requirement for a second source, he says he feels standards in the industry can only help the future of the technology — and especially users. "Standards will give users confidence in the technology and, at the same time, force media prices down as more suppli-ers emerge," Plesums notes.

But confusion reigns supreme in the rave new world of 5¼-in, optical disks. At a meeting in Portland, Ore., in March, the ANSI X3B11 committee end

The sample servo format has become own as "the OSI standard" in honor of its most forceful proponent, the Optical Storage International division of Colorodo Springs-based Laser Magnetic Storage ternational - a joint venture company



HE NEED for standards simply depends on whether an application requires the interchange of media.

> PICHARD FISHER KALTHOFF-FISHER ASSOCIATES, INC.

5%-in. optical disk drive makers led by totech, Inc. in Colorado Springs and exter Corp. in San Jose, Calif., are pushing for the continuous servo. The continuous serve disk features a

oved media previously used in 12-in. sk drives. Proponents say the con ous format will allow far greater capaci ties in drives and media in the future. Op nts, however, say the sam technically superior because it allows ad-ditional recording space occupied by the grooves of a continuous servo disk. Sam ple servo proponents say the only res er companies are sticking with the ntinuous servo is because they made oduction commitments early on and are ble to afford the high cost of retools The American Nat ional Standards In

tute (ANSI) is not the only source of confusion on the 516 in notical disk standard. Japanese standards agencies repo edly also will support a dual banner. Obexists at this point to make either stan

In addition, IBM's decision to advance its own format - with its optical disk drive roduced as part of the Personal Sys-n/2 — has not made the problem any easier. The IBM disk is closer to the con

timous servo than the sample servo, but it does not come close to either.

IBM's optical disk, reportedly manufactured by Japan's Matsushita Ltd., has been both hailed as a long-awaited IBM nent of optical technology and ed by one media man

who asked to remain anonymous, 20 IBM's bid to kill the technology forever. This type of criticism has come from competitors and experienced users of op-tical disks who say the IBM offering is too conservative. The IBM WORM disk holds only 200M bytes and has a very slow ac

cess time. It arrives at a time when mag netic disk technology is pushing past the 1G-byte level and dual-sided 5¼-in. opti-cal cartridges hold nearly 2G bytes. However, the loudest complaint about the IBM disk is that it fails to adhere to es-

ther of the two standards recently adopted by ANSI. Critics say standards are cru cial to low-end products like IBM's, and some note that the company has not been as successful in determining low-end storage standards as it has at the high end. The anxiety in all of this is that stan

ards are far more important at the low end — in drives using the 5%-in.-andiller form factor - than at the high end. The small form factor optical drive like their magnetic cousins, will be enter ing applications that are more likely to need some sort of disk interchange. By definition, low-end disks are produced in greater volume and at lower cost and are ely to be distributed over a wider area As a result, the question of interchange

so does the question of standards Already there are signs of alarm within the industry. Frederick F. Geyer, pro gram manager of the mass memory divi-sion at Eastman Kodak Co. in Rochester, N.Y., says his company has opted for a 31/s-in, form factor for its one-of-a-kind erasable optical disk. He says Kodak does not even want to get involved in the 5% in. standards war, Instead, it will start from scratch and make its plans known to all, potential rivals included, "We will act

responsibly." Gever insists BARBARA SEHR



ed by Control Data Corp. and Phi N.V. The joint venture is joined in the format endorsement by three other major optical disk makers, Sony Corp. in Jap

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EXECUTIVE REPORT

Inching

CONTINUED FROM PAGE 64

erased by shooting an even more powerful laser at the disk, which reverses the hed magnetism. But where are erasable disks?

Ray Freeman, president of Freeman Associates, Inc., a Santa Barbara, Calif... market research firm, is from the school that contends production quantities will not emerge before mid-1990. Rothchild disagrees. He says he beieves that at least 1,000 erasable optical disk drives will be shipped by Japanese manufacturers later this year. However,

be notes that production volumes from Japanese and U.S. suppliers probably will

the ultimate vision was erasable disks, which would combine the large storage canacity of optical media with the writemany-times versatility of magnetic media. Corporate records managers were salivating with anticipation of replacing huge tape-reel libraries with relative tiny optical media cartridges.

not be available before 1989.

Three possibilities And the wait continues. A large stur block impeding the introduction of erasable disks is media production. Like man ufacturers of semiconductors, thus-film heads and thin-film media before them makers of optical media are experiencing the frustration of cetting enough yields to

make optical media cost-effective. There are three types of erasable optical media now in development. Magneto-optic is ap-parently the most advanced in produc-tion, according to Rothchild Consultants. When the age of optical storage began, but phase-change and ultimately erasable polymer media are likely to follow in quick

> ance for a high data rate and broad band width. It has been the media of choice for the Japanese erasable disks now being in-troduced. Phase-change media allows an even higher data rate and broader bandwidth. It reportedly is preferred for opti-

Erasable polymer is expected to be the lowest in cost of all three erasable mediwhile, at the same time, offering the high

est performance. However, this media is still in the experimental stages, and attractive yields have yet to be reached.

Meanwhile, amid the excitement, a funny thing has happened to erasable me dia on the road to reality. There is now some doubt that these disks are even nec-essary. "With magnetic disks getting larger in capacity at less cost than optical disks, the only advantage erasable disks will have is removability," Fisher notes. And erasable optical disk drives will naturally be far more expensive than their more mature magnetic rivals.

"The longer it takes erasable disks to get here, the less a market they will have," observes Jeffrey R. Dulude, director of marketing at Optotech, Inc., a man-ufacturer of 5%-in. WORM disks in Colorado Sprin

According to analyst Freeman, eras able optical disks are likely to play their most dramatic role as a new form of back up. In this capacity, they will be a logical



or to the low-capacity floppy disks successor to the low-capacity lioppy disks of an earlier era and to the high-capacity tape cartridges of today. "I believe there is room in the market both for WORM disks and erasable optical disks to live side by side." Freeman says.

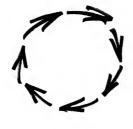
Hope, not hype While optical technology has undergone

its challenges, it is making progress and cutting through the hype. Ironically, the most encouraging development in the past year has been a hesitance on the part of major drive makers to raise expecta-tions too high. Optical Storage International, the nation's largest shipper of 12-in. disks, has been very sensitive to charges of hype in the industry. As a re-sult, the company is holding back on its uncement of a forthcoming 54-in. optical drive until the product gets onto the loading dock.

Although acceptance has not appeared

in the dimensions once expected, optical technology is still likely to become evi-dent in everything from home CD-ROM players - which use a different file format — to the massive document-imaging applications of the IRS and the Library of Congress. Optical media may never reach the magnitude of success of magnetic media, however, which has seen floppy disks appearing in K Mart checkout lines.

But the pieces are beginning to come together. In the words of an enthusiastic analyst, Rothchild says, "All of the major technical problems have been solved. All of the pieces needed are in place to turn an interesting technology into a viable, es-sential and cost-effective tool upon which users depend " a



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NYNEX Business Information Systems (2)

COMPUTERWORLD

Organizations hash out CD-ROM standards, compatibility issues

BY JOHN GALE

In the compact disk/read-only memory (CD-ROM) arena, sev-eral standards and compatibility

the technology can provide DP shops with the storage capabil-ties that MIS managers still only dream of. Most of these issues. while not completely settled, are under control through various agencies and vendor companies. In 1985, the High Sierra Group created a standard to fa-cilitate the use of CD-ROM with rating system file manage-nt in a variety of different op-ting environments. The oup then worked with the Na-nal Information Standards Or-

BM IS ONE of the few organizations that might be able to install a standard for higher resolution CRTs.

nization (NISO) and the Euro-an Computer Manufacturers

Association (ECMA) until May 1986, when it proposed a file manager standard to the two or-

NISO and ECMA each ap-proved the standard, which is currently undergoing final ap-proval by the International Stan-

currently undergoing final ap-proval by the International Stan-dards Organisation (ISO). This international standard provides for the following: • A boot block, which enables a

puter to boot or initiate pro-ing from the optical disk. A volume table of contents.

This specifies where files are on the disk and what their names

are.

Expandable logical volumes.
An information product can be published as, for example, a two-disk set and then expanded as update disks are added.

Support for the Philips N.V./Sany Corp. compact disk-

interactive file structure.
The NISO/ECMA/ISO star rd does not address those is-es unique to write-once media, software interfaces for drives, hardware interfaces for drives,

mands.

It will require additional refinement in the file format arena
when read-only disks are developed that are playable on writeonce drives or when disks are developed that have read-only as

Cute in requirement of Information Wo

In addition to standardi ions, there are se tor and/or software house dic tates the data file and index lay-out on the disk. This layout has a ificant effect on perfor-ice for some types of apolica-

the interface type used by the hardware interface that con-nects the CD-ROM drive to the ter. The de facto indu ard is evolving toward faces (SCSD, but not all dr

SCSIs are compatible with each other, so the various hardware vendors have had to work to-gether to resolve this problem. This will continue to be a prob-

· There is also no standardis



EasTek presents

the standards by which



all optical disk systems



will be measured.



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EXECUTIVE REPORT

the hardware interface. The result is that each applications developer must provide support for the command sets — and thus the drives — of his choice in a software ver, which be must create.

Developers tend to select drives for support that are widely installed or per-ceived as providing better or more reli-able performance or providing superior support. This means the retrieval soft-ware for a particular application may re-quire a certain drive to be available to the

This is being resolved as software houses support more hardware interfaces and, in the long term, as Microsoft Corp. eases its operating system extensions and relieves the software houses of the HE THROUGHPUT capabilities of the LAN are particularly significant for data-intensive applications such as image data bases. Thus, certain applications will perform more acceptably in some LANs than in others.

A few systems that require very high erformance will remain and will, there-re, need unique hardware configura-

· There is currently no standardization user interfaces, retrieval commands or menus. Such standardization is actually not appropriate, however, as these func-tions are application-specific within a par-

We must distinguish between data bases that support a particular profes-sional task and those that appeal to a broad horizontal market, such as library

For example, the needs of the bro e community are very different from the needs of the owner of a hardware store. The respective end users will have rent perceptions of what informati

is and varying experiences with computer

• Index stru This means that a particular retrieval software package can access only data med using a predetermined sub

The retrieval software almost certa cannot access a data base intended for a fferent software package.

Software houses regard their index structure as proprietary and as a key ons by which they differentiate th

If index structures were stan the end user would experience a degrada-tion in access capabilities and perceived sponse time. The American Association of Publish

ers (AAP) and NISO are preparing an AAP Electronic Manuscript This standard might provide a basis for software houses to retain their propri-etary indices and to enable a low level of common access to a data base via any re-trieval software in which both the software and the data base support the AAP

In addition, it is hoped that the AAP standard will provide low-level common access to data bases frequently found in the reference department of libraries.
Further standardization of index struc-tures is not feasible in light of the need to optimize performance and access tech-

OST CD-ROM systems use keyboards for entry devices. However, as systems are optimized for the lavman end user, 10-key pads and mice creep in as nonstandard devices

niques at the application-specific level.

Many CD-ROM-based systems, such as those from Lotus Development Corp.,
The Library Corp. and Online Computer Systems, Inc., can be used in local-area networks (LAN). The throughput capa-bilities of the LAN are particularly significant for data-intensive applications such as image data bases. Thus, certain applications will perform more acceptably in some LANs than in others.

There are interesting points of com-monality between the extensive imaging needs of optical disks, and more general work is being done in network data base

Some application ns software packages require specific CRT graphics displays for CD-ROM, such as IBM's Enhanced Graphics Adapter. Others include soft ware that is executed in a processor on the CRT interface board. IBM is one of the few organisations that might be able to install a standard for higher resolution CRTs

Most CD-ROM systems use keyboards for entry devices. However, as systems are optimized for the layman end user, 10-key pads and mice creep in as nonstandard devices. Some standards organizations have

worked to resolve many of these critical insues. A common set of commands for use with write-once read-many drive in terfaces has been proposed. This might be desirable for CD-ROM as well. •

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IN DEPTH

Your personal computer isn't yours anymore

Scenarios for the next wave in end-user computing

BY DAVID FREELAND

ad we planned bett
support for perso
computers might t
have been incorpor

and we painmed better, mapport for personal computers might well have been incorporated into the services provided by mainframe data processing centers, and information centers might never have come to be.

to plan more carefully, as recent major advances provide a fresh set of possibilities. Will information centers survive this time

Freeman is project leader for special projects in the sufermation services division at the Home Federal Serings & Loss Association in San Diego and a fermer data center consultant with Price

around, or will they become his tory? Three technological mile stones have changed some of the

stones nave changed some of the most significant premises or which information conters were originally established: 1) Fienhility provided by currently available local-area network (LAN) technology, 2) Increasing flexibility and portability of data base technology.

tributed processing software.

These advances are alterin
the way information centers d
business in the following ways:

PCs are no longer stand-alon
devices but are becoming node
of microcomputer networks or
more complex generation of hos
networks on which diets have

 In this new environment, Pl operators are no longer "little" DP managers but are becomin "remote" workstation managers

ers.

• PC data files are not owned the workstation user but, I cause of the microcomputer lost network, are becoming company resource that needs be centrally managed.

or contain manager.

PC hardware must be compable with the company networing technology and devices us
within an organization, suggesing as increase in importance
a single, under-one-roof maagement of all computer equiment acquisitions.

PC convariance systems must be

not acquisitions.

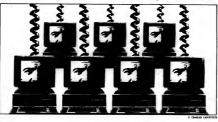
PC operating systems must be impatible with the selected tworking technology and decrease used, putting new importance on contralized manage-

ment of operating systems versions and defaults.

 PC hardware — and users that hardware — will be held r sponsible if they cause the rest the network to become unava able, stimulating new urgen for centralized management.

Changing world
In short, just about the only thing
not changing is that PC applications can still be individually se-

networking scheme.
This is true as long as the applications used can produce and receive required files in the necessary format for other network users. Even this area, however,



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Wanted: Connect systems specialist



applications and distributed pro-

cessing.

The impact of these changes will vary, but the direction will certainly be toward more of an assembly-line approach to PC support. Central DP organizations will push into information center turf, and following this intrusion will be a change in the sature of personal computing. The following scenarios are not

arfetched:

Company policy states that all
PCs have at least one host connect. All PC files are backed up
to the host via host control between 10 p.m. and 6 a.m. daily
The host may control and record
PC access as well as internal file

C OPERATORS are no
longer "little"
DP managers but are
becoming "remote"
workstation managers.

access and use or else the PC will not be able to access any network devices such as file servers and printers. The host maintains statistics and the current status of all PCs so that bots operators know before the user does when hardware problems develop.

Host and host operators use every PC on the system to achieve the cheapest and fastest processing and first early processing and fastest processing and the storage. Use consideration of the control of the control

devices.

Most mundane communications are done among PC and
host terminal users using the
workstation, including electronic document file exchanges, simple messaging and distributionlist types of mailings.

In general, new workstation requests will be handed in a pro-duction-line manner, because those workstations will be part of an overall system. The organization will continually explain to users that it doesn't matter what is available on the market; the company information system works only with authorized equipment that offers compability with the big systems family of microcomputers, misinomy of microcomputers, misinomy of microcomputers, misinomy

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ing companywide data — and that one user needs only a small slice of this total systems pie.

Job modification
A different set of jobs is always
required for a different set of
needs. In this case, there will be
fewer programmers because
programming will be easier and
will require less. There will be

greater potential exists to give everyone what they need, there is a greater need to understand what everyone requires. Some of the job changes and new types of jobs that will be created are

listed below.

Connect systems specialist. Picid-service technicians, currently trained in nonintelligent terminal servicing, will

e edge of the corporate LAN technology, emulation scheme, d networking scheme and other PC expansion activity. These connected systems

a new connected systems appealasts will also need to possess an operational understanding of PC operating systems, operating system alterations for networking, operating systems alterations for emulations, networking software, emulation software and, possibly, architecture conventions used. A broad understanding of PC file formats may also be a prerequisite for this position, as required for file

this position, as required for the transfers.

These specialists will also need to understand things like BIOS, virtual storage (both on the PC and the host), PC data security and encryption as well as managing electronic mail and

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sywide services such as usage statistics maintenance and availability and downtime The scope of the critical nowledge base in hardware and operating software required of this person is vast. Therefore, extensive understanding of PC applications software will probably not be important, which creates a need for a separate posi-

tion, a "PC product specialist.

PC product specialist. This person will be an operational expert in PC-level application software used by the firm. Deing on the size of the firm, thether there is a separate architecture group and the extent of departmental processing software used, this position may also evaluate new software for use by the firm and may also maintain application software on departs

It is unlikely that this por would become involved with prohowever, since enough of a market pres 1000 eaists in usable packaged software Also, a larger DP organization requiring PC programming would probably have a separate programming area for custom PC software that would include a PC-to-host capability.

Distributed processing salyst. In the connected and distributed environment, pro g should be accomplished at the lowest level post users and interfaces with other processes. This saves money because the cheapest processing is available at lower levels, making more expensive high-CPU-leve processing available for needs

that are more widely distributed out the company.

It will become increase possible to move processing (or one needs to keep track of where processing for all of the users is needed. For example, if a wholesaling firm's central office only needs a roll-up of rer warehouses inventory, it would be better to process (if possi the inventory programs at the tals rather than try to run inventory programs off a mainframe at the central office for simulta-

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A Different Kind of Computer Company

HE IMPACT of these changes will vary, but the direction will certainly he toward more of an assembly-line approach to PC support.

neous access by all warehouses. The distributed processing analyst will review and monitor such needs, provide users with an understanding of what poten-tial DP capabilities are available to them at the particular organization and may also perform traditional systems analysis work.

Distributed data base an-alyst. The distributed data base analyst may be the same person as the distributed processing analyst, or this may be a separate position. This person has the responsibility to identify the data needs of each user or group of users and to determine where the data would best reside. It would usually be desirable to have the data kept at as high a level as required in order to provide necessary access for others. This person will also monitor

data use to ensure that company data is kept secret and is backed up regularly and will inform users of available data so they will know of all possible opp time for data

Support by ony name The positions described above are different enough from mainstream DP jobs for some DP centers to maintain a separate work-station-, user- and distributed system-support unit — be it called an "information center"

In other organizations, how-ever, these duties will be accom-plished by individuals in multiple organizational units, perhaps one type in the technical group and others in production service areas

In many ways, the decidi factor will be bow the inform tion center manager and staff po-sition themselves during and prior to the transition stage Careful planning during this time may save the information center. Lack of a strategy may make it history. •

MANAGEMENT

TAKING CHARGE

David I udlum No dog days

for MIS

ring and news on the MIS front largely slowing to a sea-sonal trickle, one current of that flow seems to be at least hold-ing steady — American corporations' exploitation of informa-tion technology to buoy mature businesses and plunge into new

egic use of information re-ources has been subject to me hyperbole, recent events ggest the trend continues un-ated and may be gaining mo-

ing further ahead. One case in point is McKes son Corp. in San Francisco, an acknowledged leader in the strategic application of comput

item used by retailers who ddle the drug store merchan ise the company distributes. At McKesson's annual seeting last month, President and Charl Executive Officer

nology and new facilities during next five years.
The \$700 million plan focus es on construction in Arizona of

Continued on page 74

Fleet installs CIO

Exec has been honored for strategic MIS

BY DAVID A. LUDLUM PROVIDENCE, R.L. - Fleet Fiial Group, Inc. recently crested the position of executive honored this year for developing a customer information system at General Re Corp.

Zucchini, 40, started work at Fleet Aug. 3, taking charge of all data processing for the group's operations, including credit card processing and overall supervi-sion of two units that provide DP

He arrived at Fleet 11 months before the company expects to complete a \$1.3 billion merger with Norstar Bancorp, Inc. in Albany, N Y would be one of the largest U.S. bank mergers. Fleet said it ex-

In a research report on 64 ak holding companies covertent touting companies cover-ing the first quarter of this year, brokerage firm Smith Barney, Harris Upham & Co. named Fleet the best overall performer. Its merger with Norstar would

te two strong regional bank t offer an array of nonbanking ancial and DP services. neadcast and DF services.

Zucchini comes to Fleet from serving as president and chief executive officer of General Reservices Corp., an information services subsidiary of General

Re Corp., a reinsurance firm based in Stamford, Conn. In May, Zucchini was one of five MIS executives presented with an award for achi

Touch screens can ease users' keyboard phobia

BY ROSEMARY HAMILTON

Worker registance to o remains a major issue for factory managers, but some have re-cently found that touch-screen technology is effective in com-

been around for a long time, but they are really only now emerging factories," says Willi McSpadden, who follo computer-integrated manufacturing for the the Gartner Group, Inc.

roid using personal emputers on the floor exause they are intimi-sted by them, managers report. But touch-screen

"We've run into sev-

eral problems with people be afraid of PCs. The keyboard is timidating, and they are afraid they'll mess something up," says Frank Caldwell, a systems project manager at Ranco Controls North America in Plain City,

One.

Earlier this year, Caldwell's facility installed Easel software from Interactive Images, Inc. in Woburn, Mass. As a front-end to mainframe data bases, it allows workers to access the data from a PC with a touch-acreen format. Easel is icon-based, providing and inputing data such as inven-tory figures when users touch a

Caldwell says the product has helped his facility give fa workers more responsible to with re trying to push authority and accountability as far down the chain of command as possi-



"People on the shop floor as the ones confronted by the dy-namics of manufacturing. They have to make immediate deci-sions - often the wrong ones if

John Allen, a supervisor at Ranco who uses Easel to track the production of power ele-ments, says it is hard to make a ments, says it is hard to make a mintake using the product. "R's very simple," he says. "You just reach up and push the acreen." Chrysler Corp.'s Sterling Heights, Mich., assembly plant

salso installing Easel.

George Knapp, the plant's manufacturing systems manager, says workers find it almost self-explanatory. "There is so little training time," be says.
"You can pick it up in a couple of

as W. Field Jr. said the any may more than doub tment in computer tech - PARS

Data View

Data dogfight

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Fleet CIO FROM PAGE 73

Carnegio-Mellon University's Graduate School of Industrial stration [CW, June 1]. cchini was cited for de

as Net ng the Com work for Electronic Reinsurance, which provides General Re's 300 underwriters and sales nta access to all common records on a customer or a prospective customer. The system tells users whether General Re has ured a prospect and generstes documents and reports on coverage, quotations and docu-ments for new policies and ac-

ting entries Describing his experience at General Re as "absolutely wonderful," Zucchini said the new position poses the challenge of addressing a variety of complex DP needs, from the mundane to the strategic.

Ordinary building blocks "Mundane applications should in no way be considered inferior," he noted. "I don't believe you he noted. "I don't believe you can build a strategic system without having the foundation of the basic systems. Most compa-nies don't realize it's a building block process." Those basic systems "have to have a substantial

Zucchini identified his four major tasks, in order of importance, as the following:

AUG. 30-SEPT. 5

CALE

· Making sure each Fleet operation has a viable DP system.

Taking advantage of areas of systery among them.

Developing appropriate, longterm, technology-based strate-

gic plans. erating fees from market-

He said he would take advan-



able from Fleet and Norstar and from packages available on the market. "Both of these comnies have grown through ac-isition," he said. "The major allenge is to find the best apnach and stand

"It's also very important to establish a direction in technol-ogy," Zucchini said. "The tech-nology decisions are very important. A mistake could be quite cchini oversees Fleet In-

DAR

The National Conference on Network Publishing. Dollas, Aug. 31-Sept. 2 — Contact: In-teractive Features, Inc., 28¹/4 Cornelia St., New York, N.Y. ow CASE Confer

St. Louis, Sept. 1-2 — Contact: Donna Skaggs, Center for the Study of Data Processing, Cam-pus Box 1141, Washington Uni-versity, One Brookings Drive, St. Louis, Mo. 63130.

Computer Aided Publishing CAP'87 West. Los Angeles, Sept. 1-3 — Contact: Computer Aided Publishing CAP, Suite 200, 90 W. Montgomery Ave., Rockville, Md. 20850

ersery PC Expo New York, Sept. 1-3 — Contact: PC Expo. 333 Sylvan Ave., En-plewood Cliffs, N.I. 07632.

Thirteenth Conference on Very Large Data Bases. Brighton. England, Sept. 1-4 — Contact: VLDB 87. The Conference Deuter Soent, British Com ciety, 13 Mansfield St., London,

UKWIMORP

SEPT. 6-12

inque '87 — The 6th Eu-poun Trade Fair for Tech-tuces and Organization in inking. Copenhagen, Sept. 6 — Contact: Bella Center A/S, Center Blvd., 2300 Koben-SIBOS: SWIFT's Int

tional Banking Operations Seminar. Montreal, Sept. 7-11 — Contact: Euan R. Sellar, Pub-

ic Relations Department, Society for Worldwide Interbank F-nancial Telecommunication S.C., Ave. Ernest Solvay 81, B-1310 La Huipe, Belgium.

12th Annual National PSI User Conference. Dallas, Sept. 8-11 — Contact: Forum 87. Elizabeth Joyce, Suite 700 2777 Stemmon Freeway, Dal-las, Texas 75207.

Decworld '87. Boston, Sept. 8-18 — Contact: Public Rela-tions Department, Digital Equip-ment Corp., 200 Baker Are., Concord, Mass. 01742.

OSI Meeting for Gorment Users. Gaithers

formation, Inc. in Providence, which provides DP services to No dog days es and services FROM PAGE 73 such as payroll processing to outside clients. David Sheppard

continues to serve as pro of Float Inform to Zucchini.
Zucchini also supervises PAS, Inc. in Madison, Conn., which

wides processing for variab universal life insurance heterogeneous retailers. Fleet, with assets of \$11.7 ion and 490 offices in 39

states, has banking operations in Rhode Island, Connecticut, Maine and Massachusetts, Norstar has assets of \$11.1 billion and 375 offices, with banks in on investment. ew York and Maine

Combined as Fleet/Norstar Financial Group, the two firms would form one of the 25 largest banking companies in the U.S. and one of the major new "super-regional" banks. Zucchini, one of executive vice-presidents now at Fleet, said he would retain his present titles after the erger. Zuochini was a member ol

President Reagan's Private Sec-tor Survey on Cost Control, also sown as the Grace Commison, which examined the operas of the federal governme He holds a patent for the inven-tion last year of an outlet that can make mainframe computer tersals portable. He received an undergraduate degree in busi-ness and an MBA from Pace Uni-

Md., Sept. 9-10 - Contact: Jose Wywra, Room B218, Build 325, National Bureau of Sta dards, Gaithersburg, M

Financial Investment Man-agement Exposition and Conference. New York, Sept. 9-10 — Contact: FIM Conference, Fingy Management, Inc. P.O. Box 4440, New York, N.Y.

1987 Capital Microcomput-er Users Forum. Washington, D.C., Sept. 9-10 — Contact: Jackie Voigt, National Trade Productions, Inc., Suite 400, 2111 Eigenhower Ave., Alexanwer Ave., Alexan dria, Va. 22314.

The Deaktop Publishing Conference. Senta Clara, Calif., Sept. 9-12 — Contact: eybold Seminars, 6922 Wide ned, Malibu, Calif. 90245.

Distribution/Computer Fall Expo '87. New Brunswick, N.J., Sept. 10-11 — Contact: C. Software Contracts. Boston Sept. 14-15 — Contact: Regis ort. Inc., P.O. Box 453. trar, Batelle Seminars Program, P.O. Box C-5395, 4000 N.E. Exton, Pa. 19341. 41st St., Seattle, Wash. 98105. Also being held Oct. 5-6 in Chica-

SEPT. 13-19

EPT Success. Washington, D.C., Sept. 13-15 — Contact: ronic Funds Transfer Asso

would serve seven states with computer technology and natel-lite communications. The strategy is to meet the needs of a cus tomer have of high-volume but

letting in on the act companies less frequently as-sciated with information prod Field emphasized that the project would proceed only with the understanding that it would boost customer service, compaucts and services are also step Last week, Bank of America National Trust & Savings Asso ny growth, profits and return ciation in San Franciso, with Euromoney Publications PLC in If it succeeds, he said, "we will have leapfrogged our com

ture to capture and distribute petitors just as we did a decade the bank's extensive data on ago when we introduced Econ rseas economic trends. B of America-Eurom most. Companies that are un-willing or unable to to make a similar commitment to the fu-Information Services, which is scheduled to start up Oct. 1, ture will find it increasingly diffi will rely on a system designed by the partners that maintains a cult to remain competitive. Another company estab-ished in the competitive use of data base and generates prod-

(see story p. 73).

lysed last year with the crea

unit's Manufacturing Syste

linking incongruous computer

The gathering will feature a

on, Suite 1000, 1726 M St.

N.W., Washington, D.C. 20036.

The First Annual Conference on Expert Systems in Fi-

ucts with personal computers infined in the competitive use of information technology that is expanding its efforts in Fleet Fi-nancial Group in Providence, R.I., an unusually profitable re-gional bank holding company with subadizries offering data processing services to insurers A chief selling point is the system's ease of use for the stra tegic planners the information is aimed at.

In another joint venture as d other lenders. nounced this month, Westing-house Electric Corp. in Pitta-Fleet has established the po-ion of chief information officer at the level of executive vicepresident and this month hired a

house Electric Corp. in Pitta-burgh will provide training and consulting to users of Relation-al Technology, Inc. a Ingres dis tributed SQL relational data base system. A Westinghouse spokesman says the joint ven-ture will be the consume and ighly regarded insurance ex-cutive to marshall its DP efforts. spokesman says the joint ven-ture will let the company apply to a broader market the skills it has developed in designing elec-trical generating plants over In another instance, Wever haeuser Corp., the Tacoma, Wash., forest products giant, is continuing its push into informa-tion products and services cata-

computer model demonstration how process industries can use

that solutions to such technical

ns free managers to ad

on, announced a joint ven

Protocol/Tech nical and Office coi (MAP/TOP)

yerhaeuser spok

mufacturing Autom

rds. A

of Weyerhaeuser Information Systems. In conjunction with ofvative uses of computer technogy should be regarded with ferings in software, computer services, training, disaster re-covery and consulting, the healthy skepticism, managers should be mindful of such moves being made by their co petitors or future competitors Division said last month it will hold a June 1988 conference or - even in the dog days of sur mer

Luften is Computersweld's sensor edi-

York, Sept. 14-15 - Contact: Institute for International Re-search, Inc., Suite 600, 9301 Wilshire Blvd., Beverly Hills. 13th National Conference of North American Honeywell Users. Carcinati, Sept. 13-17 — Contact: Les Paca, NAHU, P.O. Box 2037, Wilingboro, N.J. C=lif. 90210

Atre Annual Forum on Data Base. New York, Sept. 14-16 — Contact: Atre International Consultants, Inc., P.O. Box 727, 16 Elm Place, Rye, N.Y. 10580.

Data Storage 87. Santa Ciara, Calif., Sept. 14-16 — Contact: Forum Management, Cartlidge & Associates, Inc., Suite M-259, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

7th Ann unnual Conference on tol, Audit & Security of AUGUST 24, 1987

COMPUTERWORLD

IBM Systems. Chicago, Sept. 14-17 — Contact: Miss Training Institute, 4 Brewster Road, Framorbum Mass 01701

Integrated Manufacturing Solutions '87. Long Beach, Calif., Sept. 14-18 — Contact: Intertee Communications, Inc., Building 33-34, 2472 Eastman

Ave., Ventura, Calif. 93003.

1987 Electronic Printer and
Publishing Conference. Maami, Sept. 14-18 — Contact
Jean O'Toole, CAP Internation-

Jean O 1606e, CAP International, Inc., One Sour Road, Marsh-field, Mass. 02050.

ICCC-ISDN '87 . . . Evolving to ISBN in North America. Dallas, Sept. Is-17 — Contact: International Council for Computer Communication, Cl

con communications Research Corp. Room 18349, 259 W. Mount Plessant Are., Livingston, N.J. 07039.

CAM-I Industrial Autoenstion Standards Conference & Workshop, Chicago, Sept. 15-18 — Contact: Annette Van Hauten, Computer Aided Manufacturing-International, Inc., Suite 1107, 611 Rynn Bre.

The National Association of Bank Servicers' Annual Meeting. Seattle, Sept. 15-18 — Contact: NABS, Suite B, 5008 Fine Creek Drive, Westerville, Ohio 43081.

Workshop on Computer-Assisted Map Analysis. Corvalis, Ore., Sept. 16-17 — Contact: School of Forestry and Environmental Studies, Yale University, 205 Prospect St., New Haven, Conn. 06511.

Information Systems Consultants Association's Second Annual Conference and Consultants Market. Atlants, Sept. 18-19 — Contact: ISCA, Inc., P.O. Box 467190, Atlants,

SEPT. 20-26

Interex North American Conference of Hewlett-Packard Co. Business Computer Users. Las Vegas, Sept. 20-25 — Contact: Interex Conference Department, 680 Almanor Ave., Sunnyvale, Calif.

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502-633-5700 EDI & APPLICATIONS TOO! Management Information Systems for Strategic Advantage. Philadelphia, Sept. 20-25 — Contact: Registrar, Office of Executive Education, 200 Vance Hall, The Wharton

ice of Executive Education, 200
fance Hall, The Wharton
chool, University of Pennsylvain, Philadelphia, Pa. 19104.

Office Systems Conference. Littleton, Mass., Sept. 21-22 — Contact: Marins Petrijohn, Dataquest, 1290 Ridder Park Drive, San Jose, Cald. 95131.

Integrated Services Digital Networks. Sen Francisco, Sept. 21-22 — Contact: Customer Service, Prost & Sullivan, Inc. 106 Futton St., New York,

Corpcon Corporate Microcomputer Exposition and Technical Conference. Los Angeles, Sept. 21-23 — Cotact: Corporate Expositions, Inc., P.O. Box 3727, Santa Mosica, Calf. 90403.

> SM '87: Conference on oftware Maintenance. Ausn, Texas, Sept. 21-24 — Conct: The Computer Society of

the Institute of Electrical and Electronics Engineers, 1730 Massachusetts Ave. N.W., Washington, D.C. 20036.

Fifth Annual NCR Users Eastern America Conference. Fort Washington, Pa., Sept. 24-25 — Contact Frank Whalon, clo Tinius Olsen Testing Machine Co., P.O. Box 429, Wilters Group. Pa. 1000.



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COMPUTER INDUSTRY



Talking a lot, saving little

About a year ago, we oubl in this column a list of what we considered the top 10 comp er industry cliches of 1986. In the midst of this summer's dog days, it is time to roll out the secand annual edition

1. We offer solutions. Variation: We are a solutions driven company. This was No I last year and has only solidified its position in the last 12 months. It seems no one in this business sells hardware, software or communications gear anymore, just "solutions," If the phrase means better integra tion of islands of automation within an organization, fine. But in all but the leanest MIS ope tions installing complete turnkey systems, it is MIS that provides

took to essist that task 2. We are committed to andards. Unix, Manufactur-(MAP), SQL, Open Systems In-terconnect (OSI). . . . Everybody says they're committed. If they were all truly behind standards, we wouldn't need the Cor poration for Open Systems to sh OSI, and we wouldn't have the MAP controversy rearing

the solutions: the vendors supply

ts head every other week 3. We provide depart-ental systems for today's distributed environment of networked work group com ing. Doesn't anyone make mini computers anymore? (By the ray, is a work group larger or

aller than a department?) 4. Our industry is contting, and this represe a great opportunity for us. In other words, we can't wait to swallow up a cash-starved comtor and increase our market

5. We offer much more value-added service, or prod-uct, and we don't compete on price alone. This one is voiced by the third-party market when a major vendor unexpectedly sizshes prices on systems, soft ware or maintenance. Granted, third-party maintenance pro-Continued on page 80

Workstations hit financial target

Price cuts, graphics spark Sun, Apollo growth in brokerage market

BY ALAN ALPER

NEW YORK - Technical workstation vendors are making sig nificant inroads into the financial rices industry, a market that only recently has become a primary target for their high-per-

In the past year, leading banks and brokerage firms have adopted Unix-based technical workstations manufactured by Apollo Computer, Inc., Sun Microsystems, Inc. and IBM for a variety of applications. Uses range from securities trading and real-time market analysis to

portfolio management and expert systems development. Fueling the trend is the grad-

ual price reduction in entry-level electations from more than \$10,000 to less than \$5,000. At this price point, Unix-based ground the Motoroks Inc. 68000 line of microprocessors are pro viding more bang for the buck

than high-end microcomputers based on Intel Corp. 80286 and 80386 microprocessors From a software perso have seized the opportunity to crack the financial services bu ness while Microsoft Corp. MS

DOS-based micros still lack true multitasking capability. OS/2 Microsoft and IBM's multitasking operating system for the per-

sonal computer industry, is not expected to be available until party part year People do not want to wait for OS/2 to be available," says William O'Neil, vice-president of

technical planning at Shearson Lehman Brothers, Inc. "Many firms are looking at Apolio, Sur and even IBM's RT Personal Computer for that reason."

Both Anoilo and Sun are in the

process of opening sales and support offices in the world financial centers of Chicago, Los Angeles, London, New York and Tokyo. Both see increased penetration of the financial services market as vital to sustaining their accustomed heady growth rates.

"We looked at the sales and

trading area and found that there was a market of 100,000 sea [uners], growing at 10% to 15% annually," notes Bruce Golden, Sun's financial services marketing manager. "With trading floor technology turning over every three or four years, we felt you can never saturate the market. Golden says that traders like

information displayed graphical ly because it better reflects fi-nancial relationships, Multitasking is important, he adds, because of the traders' need to nator a variety of markets simultaneously. Traders used to need eight to 10 monitors to track vital market information, but with a Sun workstation displaying multiple windows, mar-Continued on barr 81

Cincom eves first public offering

BY JEAN S. BOZMAN

CHICAGO - Coroom Sustanna Inc. President and Cluef Execu-tive Officer Thomas Nies last week projected that the Circinnati-based data base company will make its initial public offer ing in the next nine to 24 The timing is very appropri

ate for us now to seriously consider going public," said Nies, who was in Chicago to address a Cincom executive seminar. "We would like to raise \$30 million to \$50 million by allowing public ownership of a minority sh the company. We would like to use outside capital to expand our infrastructure and our distribu-

tion system The aim of the public inves ment in Cincom would be to apur the company toward its goal of \$200 million a year or more in annual sales. The firm currently projects revenue of \$115 million

Cincom is the only major mainframe data base sumplier that is still privately held However, Applied Data Re-

search. Inc. is now a unit of As part of his investment atrategy, Nies said he plans to retain the role of president for a year or more, in part to reassure

investors of the company's direction and stability. On Aug. 10 Nies reassumed the comp presidency after Dennis Yab Continued on page 80

Data View The chip industry rebound

US semiconductor industry's monthly book-to-bill ratio, 1986 to 1987*



Network General: sniffing out network snafus BY ELISABETH HORWITT

SUNNYVALE, Calif. - When he formed network diagnostic runnany Network General Corp. in 1985, Harry Snal brought with him two valuable lessons that he had learned at his former company, Nestar Sys-

The first lesson: Thou sha ot sell a technology before its The second lesson. Thou shalt not tie a networking prod uct to a single set of protocols.

Mountain View, Calif.-based
Nestar, founded by Saal in 1978, sold local-area networks (LAN) several years before their time according to Saal. "It was an un-

hill battle," he says. "We were convinced the technology was right and the idea was good, but, being small, we cruide t wait 10 years for the Year of the LAN

When Nestar was clearly sundering, Saal looked around for an area of the LAN market in which there was growing de-mand but few products available. Two years ago, he found such an

We found at Nestar that one of the great problems of the net-work vendor is solving problems when one yendor supplies the software, another the per-

When networks work, they work great, but when they don't. it a iddfiscult to find the problem because it is often something small. like one bad card or cable

gment," he sous. Enter Network General and its aptly named diagnostic prod-uct, Sniffer. The Sniffer montors packets going over a net work between a given PC and server, searching for existing and potential bottleneck

It works like a CAT scan or X-ray, looking at packets and protocols going over the net, al lowing you to see healthy and imhealthy activity," Saal says, "Ether things are already at a level where you can make a major improvement by tuning the network, or there is incipient rot which will cause problems if left

With a \$20 000 proce tag the Continued on page 81

Cincom

lonsky's sudden resignation after a three-year tenure. Yablonsky left to become president and CEO of the Carnegie Group, Inc., a Pittsburgh-based artificial intelligence software firm [CW.

intelligence software firm (CW, Aug. 17). Majority control of Cincom

would remain firmly in the hands of Cincom's 1,400 employees, who have been granted stock options since 1981. "We would not provide majority control outside the company because of the short-term goals of the investment community." Ness casment community." Since cas-

tioned.

Nies blasted investors that have broken up companies for short-term gains in recent years.

"Giving those kinds of investors majority control would be letting events control your company's strategy, rather than letting you control events," be

Nies said Cincom has spent \$100 million on research and development costs since 1979, something that outside investors would never have allowed. Last year, R&D expenses topped out

at 19% of Cincom's budget.

The firm first hinted at a public offering nearly three years ago but put the plans on hold when the mainframe software

industry sagged.

Cincom, the first company to market a competitor to IBM'a DB2 relational data base, has said it intends to capitalize on more than seven years of development in the Surra line.

Talking a lot

viders can offer customized services that users may find superior to IBM's. But their businesses never would have gotten off the ground without underpricing Big Bine, and cost savings are still

6. It's a software-driven business now. Not entrue. If it weren't true, it wouldn't be a clithe right?

che, right?

7. We are focusing on vertical markets. Now there's a phrase thet mean many thing phrase the mean many thing to many people. To some ventional markets, to others, the business making customized wifegets for oil of etiling right in the North Sea. To show the control of etiling right in the North Sea. To show the control of etiling right in the North Sea. To show the control of etiling right in the North Sea. To show the control of etiling right in the North Sea. The Nor

8. We are reorganizing to better serve and get close to our customer. A binhet justification for layoffs, plant closings and reshrifting top executives to reward those who have done well and bury those who haven't. This one really means, "We know that what we've done so far hasn't worket so we'll try something else."

9. Our departing chairman/president/chief executive officer will remain with the company on a consultant basis to identify new basis to seem the position to the company on a consultant basis to identify new basis to identify the company in the industry lately. It is usually an outright false-hood, unless the company considers it a new basiness opportunity to operate outplacement services for departing executives for departing executions.

There is a pause in the market as users are assessing the impact of the IBM Personal Systems IZ. Ge., a couple years ago, it was tax reform or the IBM 3090 or the strong dollar. For saids are never the wendor's fault; there is always an outside reason. But the proof is in the pudding of the competition. You don't see seany "pause" at Compan, Tandy, Apple or the micro software Pig Turee.

Wilder is Computerworld's sector of tor, computer industry.

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Het most, lanks, and other necessial problems in jet engines show up more modify noting noting switing with men and a Problem's formant video speasary by the US. As Proves, its mind on an absorance, third-generation version of the system, developed by Highes, how been delibered to Arnold Asir Force Station in Rememe for one in authyring engines undergrange preformance testings. Delegated for both laboratory and field applications, the all-electric thermography system provides a real-time, multi-cost television delaying of the temperature distribution of a some being viewory. The reversion features enhanced image recensing capability, a fine-field improvement in an information for quickles, more accurate legated and improvements that provide the turn with more information for quickles, more accurate legated and improvements that provide the turn with more information for quickles, more accurate legated.

An aircraft collision produces function is part of the new air traffic control system in the Republic of Kerna. One of the world host to applications devils not supplicated cellular air traffic control (ALC) systems are controllers when aircraft (by in converging paths, descend below a safe altitude, or approach restricted airquesce. Rader datas and flight processing fluencies are automated and combined in the system, enabling controllers to size entire active year despections). The system motions data sizenthaseously controllers to size entire active year and expedience in the system and controllers of the extension participate and the intervent systems. When a postular controller controllers consolic. Under development for three years, the XTD systems and the aircraft controllers of consolic. Under development for three years, the XTD systems and the aircraft collision providence function were both developed and built by Hagher. The system provides complete control of South Korena airgance, including en route and airport approach corror throughout the antion and over occurs areas.

A ground-based sensor in being developed to reduce response to chemical sensors. The Hughes Remon Active Spectometer (RAS), disapped to detect chemical agents up to three miles away will leasen the dauger to firward observes and the larger community. Unlike conventional point detectors. It is not because the contractive of the contractive of the contractive of the contractive of the readings. The unit because current of contractive discussion of the chemical. Studies are underway to design the RAG on U.S. Army concentration, and location of the chemical. Studies are underway to design the RAG on U.S. Army contamination which can all chemical studies are underway to design the RAG on U.S. Army contamination which can all chemical studies are such as the reading of the RAG on U.S. Army contamination which can all chemical studies are such as the reading of the RAG on U.S. Army contamination which can all chemical studies are such as the reading of the RAG on U.S. Army contamination which can be contaminated to the reading of the RAG on U.S. Army contamination which is the RAG on U.S. Army contamination which the RAG on U.S. Army contamination which the RAG on U.S. Army contamination which the RAG on U.S.

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For more information write to: P.C. they 45090, Last Angelles, CA 50045-0000

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COMPUTERWORLD

SPOTLIGHT

EDUCATION AND TRAINING



A well-rounded program for development of DP personnel includes continuing technical education as well as training to build proficiency in the "soft skills" of management.

The way beyond Babel.



Imagine trying to build a railroad system if every locomotive manufacturer used a different track gauge. And each local stretch of railroad had a different load-carrying capacity and its own unique set of signals. The business of

moving and managing information is in a similar state today Machines can't always talk to each other. Proprietary systems and networks abound. And the enormous potential of the

Information Age is being dissipated by incompatibility

The way beyond Babel lies in setting firm, far-reaching standards. In developing products and services that conform to those standards while establishing new standards for higherlevel functions and applications.

The process must be continuous. Dynamic. And cooperative. We must share our visions, technical approaches and experiences. AT&T is committed to

that course Our involvement in the evolution of ISDN (Integrated Services Digital Network) is a good example of this process at work.

AT&T works closely with national

and international coordinating groups to establish standards through consensus and insure that they are consistently interpreted.

Where standards are firmly established, we've developed products and services that conform to them and address a broad range of customer needs. From voice (data work stations and ISDN PBXs for business to central office switches for Operating Telephone Companies.

Wherever possible, we've also shared the benefits of our experience, as we did in a recent Chicago test where, in partnership with Ameritech's Illinois Bell, AT&T began the nation's first customer application of a production ISDN system for McDonald's.

We must, as an industry continue working together to provide our customers with maximum flexibility and utility. Then they can decide how and with whom to work.

Once we've taken those important steps, we foresee a time when

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INSIDE

Interview

Terry Ebert, director of training at Morgan Stan-ley, discusses his firm's three-pronged training strategy. Page S5.

Mixed Messages

A judicious blend of class-room training, CBT and video instruction offers the ideal training environ-ment. Page S8.

The Transition The road from "doer" to manager can be hard go-

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Obstacle Course

Know-it-all students, lack of corporate commitment and varying skill levels are just a few of the chal-lenges technical trainers say they must deal with in the clasaroom. Page S10.

Teachers Who Can

Good classroom skills are just the beginning. The successful trainer must be flexible and imaginative and, above all, possess a strong business orienta tion. Page S16.

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Detailed guides to sup-ers of technical and ma agement training for DP. Pages S11 and S14.

Cover illustration: erzy Kolacz

Power is one reason to put business and management education into DP curriculum. Otherwise, generalists may grab control.

BY MICHAEL SULLIVAN-TRAINOR



o guarantee that the MIS department is more closely tied to business strategy, executives at Ralston Purina Co. in St. Louis are promoting nontechnical managers to senior DP positions.

"The corporate executives don't have time to manage the de-"The corporate executives don't have time to manage the de-partment themselves, so the alternative is to got a person they com-pared to the company. That person is usually a corporate non-DP staffer on a fast track who understands the business, "usys Cut McDermott, Raiston company. That person is usually a corporate non-DP staffer on a fast track who understands the business," usys Cut McDermott, Raiston exercises to the land of sport in the state of the company of the product broady nestands positions. In this contract the company of the production through nestand positions. In this contract the company of the production of the land of the company of the company of the company of the production of the land of the production of the land of the production of the land the company of the production of the land of the

town departments to business-oriented peers in one of the key factors driving MIS managers to seek specialized management training and educa-tion. "There is definitely a trend to transfer provcon. Torre is occuracy a creat to training group, " says J. Deniel Cougar, professor of computer and management science at the University of Colora-do. "Obviously, the reason is we have not pre-pared our technical people well enough to do a good job in management. In those comp ning, the executives are reany rial ability is more important where this is has

ning programs outside the artment include the follow-

ome aware of the competitive advantages wided by information resources, they are relying more heavily on MIS to apply systems to

serve business strategy.

• High turnover. Companies are recognizing that high employee turnover within MIS is partly

Sollivan-Trainer to a Communication and arrains were

ers.

Though research in the late 1970s identified the need to provide MIS/DP professionals with unique management and business training, many companies are only now instituting independent. programs to shepherd people through the tra

programs to sneighere people for vogas untra-tion from technics to manager. Co. in Hart-ford, Com., is only now finding out the hard way that technical people find it difficult to act as man-agers without specialised training. More than 50 DP consultants at Allestate work as project lead-ers and liaisons between the information systems group and end users. Promoted for their techni-

cal provess, they received no management training for their particular needs.

"Directors who have consultants reporting "Directors who have consultants reporting to them are recoving negative feedback," says Pat Lucas, Alistate's manager of technical training, "They've gone on walk-throughs and found that the consultants don't know how to talk to users." Within a year, Lucas expects to implement a DP management training program to provide

consultants with interpersonal and man

Management FROM PREVIOUS PAGE

skills. "Our corporate m ment development training does not address DP needs," she says. DP professionals need more cations skills training because they are used to work ing with machines, not people. Many companies currently

concentrate their efforts on training technical people who are already struggling in man-agement positions rather than teach new candidates manage-

ment skills. Most often, the recipients of this training are guys who have been in management jobs for six months to a year," Cougar says. There is a strong backlog of existing managers out there who size technical training, and many

get priority over the people being groomed for management.

Many of the current managers are people with a lot of technical background but without the proper education. The backlog stems from the fact that we are still giving most of the budget priority to technical training."
Rapid changes in technology

technical background or not are causing companies to emphacan take technical courses from outside vendors. But until re-

managers still view management training as "a nice extra," Cou-

gar says.
"Managers can still mar without training," he adds. "So the training is often viewed as icing on the cake Raiston Purina's MIS manag ers - whether they possess a

cently, they were not expormanagement training within the MIS department, McDermott is trying to provide management training for his 200-person technical staff at the company's St.

For the past two years, the emphasis has been on nontechni-cal training." McDermott says. We've used American Management Association courses computer-based training and video tapes of management consultant Tom Peters. We're trying every technique we can.

"I'm trying to expose pe to management and busines skills. There's a lack of manage ment perspective among the DP people. I'm trying to change the set," he says.

Different cultures Moving technical staff members into management positions requires providing them with the skills to work in a different cul-ture. First, the technician must

HERE'S a lack of management perspective among the DP people. I'm trying to change the mindset." CURT MCDERMOTT

RALSTON PURINA CO.

be convinced that it is worth his

time to learn them.
"Technical people tend to think of management skills as something you can learn when things quiet down, not as a way to handle yourself every day," says independent consultant Rosalind Gold. "They need to learn that when you are respon-sible for getting a lot of talented people to work toward a common goal, management skills are

While first-line supervisors and project leaders need training in project management, delegation and communication skills,

sensor managers require more complex training.

"They need to learn a lot about company politics," Gold says. "As you get higher in the organization, political considerations are a key factor in your success. A lot of decisions are made that sound like technical compromises. Sometimes, of course, they are.

"For technical people who are well versed in their specialty, olitics seems to contaminate the purity of the speciality. process as a way to make their work available to others rather than as harmful to the technical solution," she says. Beyond adapting to cultural differences, technical people

must switch their loyalties, says consultant DeAnne Rosenberg.



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agement trainer since 1971. "Often, a technical person's loyalty is targeted more at the excitement of solving technical problems than at meeting the Rosenberg says. v's peeds. Managers have to be loyal to the compa-

Reaping new rewards For most managers, transferring loyalty means finding different rewards in their work from when they were technicians For example, Steve Folick, an informa tion systems supervisor at Lockheed-Cal-ifornia Co. in Burbank, Calif., found different ways to obtain satisfaction when be was promoted from the programming

ranks to a management post. "There are different things that moti-vate you as a manager," Folick says. "As a programmer, my immediate gratification came from writing a piece of code and seeing it work. If your reward system is on that level, then it is difficult to make a transition to a level where your rewards

are from the good work that others do. "A lot of times, as a manager, if you d business letter, you feel good about that. You gain feedback from different kinds of activities. Although every

once in a while, I like to go back and write some code," he says. Using a national data base of 8,000 DP professionals, Cougar and Robert Zawacki, professor of management and organizational behavior at the University

of Colorado, compared survey results on motivation and management of technical professionals with those of 500 other oc-The research they conducted reveals that DPers have a greater need for

growth than any other occupation surveyed.
The DP staffer's strong desire to take on ever greater chillenges makes him an ideal candidate for fast-track manage-ment positions, Cougar says. But the technical bias of many DP professions prevents them from seeing mana

as a viable growth onth "They need a lot of challenge in their jobs," Cougar says. "But technicians feel they'll lose their technical capability if y become managers. They need exter nal motivation that promises the manage-ment job can be just as challenging. This idea has to be made more explicit in man-

agement courses.

Cougar and Zawacki also found that DP dessionals have the lowest need for social interaction of all the occupations sur-veyed. Based on this finding, Cougar contends that management courses for technical people should contain a strong

dose of small-group dynamics.

Managers must, by the nature of their job, increase their level of interaction over that of independent technical roles. But there is some debate among MIS an emphasis on technical skills is a hindrance or an asset to a ma

On one side of the issue are those who say that nontechnical managers often find it difficult to gain respect from their tech-

"A pure manager cannot manage a technical staff well," says Paul Bangert, assistant vice-president of data process-ing for Bank One, Indianapolis, NA, "You have to have some good basic background in what your people are doing. A nontech-

NONTECHNICAL manager cannot appreciate the problems his staff faces, and that causes a real decay in morale among the technical people."

PALIT. BANGERT

nical manager cannot appreciate the problems his staff faces, and that causes a real decay in morale among the technical

On the other side is Jim Bigham, viceresident of operations for Prudentialsche Securities, Inc. in New York. 'A good manager can manage a technical organization or a nontechnical one, re-

BANK ONE, INDIANAPOLIS, NA gardiess of his background, because

ing the skills of the people around him," be says. ectively manage technical departments because their objective is not to be technicians but to be providers of the busi es and controls.

Whether companies emphasize the technical or the managerial side often de-

nds on their long-term strategy, says Curtis Plott, executive vice-president of the American Society for Training and Development in Alexandria, Va.

"The type of training the training de-partment will provide has to do with how it aligns itself with the company's bus-ness objectives," Plott says. "If the company is trying to change the culture or the business strategy within the organization. ng will focus on management deve opment. On the other hand, if the comp my is cutting costs or has identified tech

nology as the key to the future, there will be a lot more technical training." For example, at Lockheed, technical skills are vital to the company's sophisticated military aircraft manufacturing business, and MIS professionals within

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ext Manage Ada

the organization are currently more concerned with the technical knowledge and ies of their managers than with

their managerial skills.
"Over the last couple of years, we have recognized that we need to help our management understand the technical as-pects of the organization," says Merv Dirks, information management special-

Because a large portion of Lockheed's population includes engineers, the com-pany's management training is geared to technical professionals, eliminating the need for a separate MIS management program. Companies with fewer technical employees, such as those in the finance and insurance industries, tend to offer ways they can be more effective

OW RECEPTIVE are MIS managers to management training programs? Initially, they make the transition "kicking and screaming."

> BILL ANDERSON PRIIDENTIAL BACHE SECURITIES INC.

for MIS professionals. "Everyone is trying to use technology smarter," says Sandra Ginnis, director of DP education and development at Travelers Insurance Co. in Hartford, Conn. a service industry like ours, technology gives you an edge, and it requires you to look at your personnel and figure out

Until recently, Ginnis's department

conducted only technical training. Now, because of new business objectives, the department will offer management training next year. Courses cover only 20% of what DP

professionals need to know to become managers, Ginnis says. The other 80% of their management knowledge should be

vided by on-the-job experience, inading formal job rotation, mentoring d succession planning programs.

and succession of The Travelers' version of job rotation would include identifying the skills a techmical person needs to acquire and deter-mining which on-the-job experiences pro-vided exposure to those skills. The length of time in the different jobs would range from six to 18 months and could include exposure to both technical and manage ment skills

Ideally, the candidates for job rota would take courses to prepare for rota tion, move to jobs at their own levels and once they acquired the necessary on-the

Another possibility Ginnis is considerng would be to send DP staff members to courses covering the areas of the business they support. For the program to work, Ginnis's department must coordinate its orts with the DP supervisors.

"We don't have the staff to do all the evaluations for individual development plans," she says. "I envision a partnership with various line supervisors to identify the skills needed. The managers would functionally develop the individual plans, and we would become a delivery system

Monogers from Missouri How receptive are MIS managers to man

ment training programs such as the Initially, managers make the tran "kicking and screaming," says Bill Ander-son, director of Prudential-Bache's Infor-

mation Systems Division. Two years ago Anderson introduced a full management ucation curriculum to his division.
"I was facing managers with up to 15

years' experience, and their attitude was, 'Show me,' 'he says. "They mid them soo much to do, but once they beca involved with the program, they were more positive. We had to prove it had value and was high quality.

Anderson's support of the program was key to its acceptance, says Cynthia Triolo, assistant vice-president for training and human resources within the division. "You need support from the top lev-el. No matter how good the quality of the training, it wouldn't happen if it wasn't for that," she says.

When Anderson took over the division three years ago, there were less than 100 information systems employees. Now the staff consists of 550 people. This rapid rise in manpower caused an urgest need for technical people to become managers. Although it was a logical career step, most of the managers did not have access to management training beyond generic courses offered for other departments. So the information systems manag

curriculum was implemented.

"We're still playing catch-up to edu-cate those managers," Triolo says.

"Some of them came in with management "Some of them came in wait manage....... experience, but we want to make sure everyone has that same basic set of skills

The management program, which amounts to 35% to 40% of the Informa-tion Systems Division's training budget of about \$100,000 a year, accounts for 2% of Prudential-Bache's information systems budget. At the heart of the curriculum are two core courses - "Leadership Education" and "Managing Work Rela

Leadership Education, a custo version of a course offered by Learni Continued on page So

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amdahi The Smart Choice

Terry Ebert is director of training and recruiting for Finance and Ad-ministration and Operations at Morgan Stanley & Co. in New York. He is responsible for information services and entry-level and advanced training. Ebert was interviewed by Computersorid senior writer Michael Sullivan-Trainor.

What are Morgan Stan-ley's business goals, and how do they relate to MIS training?

In the investment banking envi-ronment, we live or die with data processing. Our overall goals are to increase systems availability, control costs and increase user

satisfaction.

Technically, we want to improve the efficiency of our coding, improve response time and improve systems stability.

On the management side, we want to make the information systems professional as aware of the business as the users so that be can have input in user meet-ings that deal with business ob-

jectives. Our specific management goals are to increase the efficien-cy of our operation, maintain a ty to but operation, maintain a positive environment and reduce turnover. We have about a 15% to 20% annual turnover, but it was higher than that before the training was introduced

I developed the program in 1982, when I came on board. We

1982, when traine on these, we didn't have to convince people of the need for training because back in 1979, when the entry-level program was implemented, Morgan Stanley's information department when the program of t systems department

through a tremendous change.

A very strong individual, both politically and personally, took charge of the department then, and he had a clear vision of how be wanted the department to be shaped. So 1979 through 1981 was a period of great trans when many people simply left of their own accord and other people, who had worked with the new department head, were hired. The department was only 35 to 40 people strong at that time because we only had a New York-office. Today, there are 700 people, located in London, Tokyo, Frankfurt and Geneva, with new offices opening in Hong

Kong and other areas in '88 CV4

training: technical, which starts as soon as an employee comes into the organi-zation and continues through his career; the

toward the end of the first year and contin-ues; and management training, which begins

second year.

At the entry level, rather than hire comoperators, we in college stu-

pater operators, we nerry bring in college sta-dents. Their training begins by performing that function. They are brought into operations at the data center, and for the first six months, they see in a force of the data center, and for the first six months, they seek for bours a week-Fortr bours of that is actu-week-Fortr bours of that is actuweek. Forty hours of that is actu-

ally working as operators, and 20 is on-the-job training. After qualifying as operators, they learn programming for four months. At the end of six months, we have people who have worked as operators and are able to cycle into our systems development or applications pro-

What about more ad-vanced training? We teach everything from ad-

vanced natural programming techniques to user consulting skills. In addition, we teach our people about the investment banking community. They learn ocial accounting and cornorate finance in courses taught by faculty from MBA programs at

es ranging from very basic agement skills, like effective communication and nent, to project Our entry-level people will typically be managi hers after about two years.

groms? We use a mix of in-house staff

ng in their areas of exper-

tise and external consultants. The curriculum is developed cooperatively by our staff and the On the technical side,

Adebas courses are all taught by our senior staff in that area. We have an optimization group, which works to make our code more efficient, and members of that group teach courses in the ing area. Structured sign and testing is taught by Arthur Young Co.
In the advanced training, we use some of our traders — peopie who actually work at the business of the firm — to teach

out their markets. you meet with any re lance from your techni ed to learn m

We don't, partly because we select the people to work in this en vironment very carefully. require bright people, but be cause of the emphasis on business and leadership, we are very Herent. A lot of people who do Continued on page S15

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Management CONTINUED FROM PAGE S4

International, Inc. in New York, deals with interpersonal skills, managing work relationships and motivating DPers.

After taking the leadership class, managers move on to a course in managing work relationships developed by Ridge Associates, Inc. in Cassnovia. N.Y. The

signs into the time and the signs of the sig

HILE formal management programs allow all of a company's managers to attain the same skills, informal ones give managers an opportunity to develon their own ideas about necessary management skills.

Customizing each course to address the specific needs of the company's information systems managers is an important part of the curriculum. Learning International and Ridge Associates were chosen as vendors because their courses could be designed to apply to the practical needs of the department, Triolo says.

the department, Triolo says.

Unlike Prudential-Bache, other companies provide only minimal DP manage-

necessary management skills.

ment training to supplement generic cor-

porate education.

In these environments, managers must seek out their own courses or petition the company to bring a consultant inhouse for a one-time presentation.

"Large companies identify a fast-track route for certain individuals, and they of fer specific management programs to train them," away John Cargoll, the Data

Processing Management Association's (DPMA) director of education. "Smaller companies do not have the resources to implement their own programs, so they need to take advantage of outside semmars."

nars."

In ond out of the nest
American Fletcher National Bank &
Trust Co. in Indianapolis, recently ac-

American Fietcher National Bank & Trust Co. in Indiasapolis, recently acquired by Bank One, offers some supplemental DP managers are monosuraged to an anneeded basis, but managers are neouraged to seek out their own courtes. "Traditionally, we have providor training through human resources as the primary source," says Pini Shaw, information conter analyst. "But we also formation conter analyst." But we also house programs."

Whee a bath of DP managers needs to Whee a bath of DP managers needs to

When a batch of DP managers needs to be trained, Shaw provides multimedia seminar programs from Deltak Training Corp, in Naperville, Ili. The programs, which include "Time Management" and "The Middle Manager as Innovator," altow self-paced learning using text and vidco cassettes. Besides the Deltak program, the bank also uses an informal buddy system that pairs new managers with experienced ones.

with experienced ones. While formal management programs allow all of a company's managers to at-tain the same skills, informal programs give managers an opportunity to develop their own ideas about necessary management skills. At Bank One, Paul Bangert's development from a systems programmer to asistant vice-president of DP included a mixture of in-house and vector called a mixture of in-house and vector.

After 12 years as a programmer. Stemgert now manages the bank's superpert now manages the bank's working in BBN's CICS, VTAM, VM and WYS environments. He acquired his management shift intrough in-broose human agement shift intrough in-broose human people, rational decision making and performance appraisants, as well as by an extending management courses offered by local chooks and an BBN Gourse in project mantical to the project mantaction with his current post in that he still manistans his technical expertises.

maintains his technical expertise. "I still like being a technician. I csion training some of the junior people, and an very much trying to stay technically current by working closely with my staff. I would not want a position that is 90% management and 10% technical." Bangert says.

The transition is not without some sac-

The transition is not without some sicrifices, however. "One of the more difficult things is not having as much hands-on work," be says. "Now, I'm working through two kyers of people, which is hard to get used to. I had to develop trust in the competence of the technicians working for me."

firing from within

A lack of resources for management training doesn't mean the training needs to be unavailable. Even small companies can find creative solutions to meet their requirements.

At Star Market Co. in Cambridge,

Mass, DP Derector Allen Williams identifies which technical people would be suifies which technical people would be suistaff members to train newcomers and observing their performance. If the staff member likes the training experience, he can then take a series of courses offered by an outside wendor to develop



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ragement skills. ement training

aires \$3,000 a year, or 50% of Williams' training budget and less than 1% of the DP budget. Another alternative to inhouse seminars are sessions sponsored by professional asso-ciations. The DPMA offers an-

nual seminars nationally and re-gionally to provide business and technology education. The DPMA is currently considering the trenches to see what's going offering management training courses in its 1988 programs.

Budget limitations notwith-anding, a healthy vendor community is growing to meet MIS managers' educational needs. Seeing a lucrative market niche, inagement consultants and choical training companies are targeting management training for technical professionals. How-ever, not all the vendors are as

expert in the area as they claim.

Trust the vendor?

"Choosing a vendor is really difficult, because a lot of them say the same things," says Terri Pawlowski, manager of technical education at the Hartford Insurance Group in Hartford, Conn. "They are very articulate, send you jazzy brochures and sound good, but you never know until

you have them in. Many of the vendors com Many of the vendors come from psychology and marketing backgrounds rather than MIS. Vendors who do not have experi-ence as MIS managers fail to provide practical training, Lock-heed a Folick says.

"There is not a lot of practical experience in these courses. Ev-erything is very theoretical," Folick says. These committants should really go into a shop and become part of a project tea

Then they could come back with real-life experiences."
Measuring the effective Messuring the effectiveness of management training, whether developed in-house or purchased from a vendor, is purticularly difficult. "Most companies don't have any systematic way to determine whether the training worked," says Charles Wilson of Southern Training Corp. in Columbia, S.C.
Althouseh most of the music

lumbia, S.C. Although most of the results of management training, such as changes in employee behavior, often dely quantitative measurement, companies can do a better job of determining effectiveness if they first identify exactly what

they hope to gain by the trai AVER OF He says that objectives should He says that objectives should be spelled out for the class and then, three to six months later, the trainer should sak the participants, "Based on the objectives, what are you doing differently?" Then be should sak the supervisor of the sees any changes in the trainee's behavior. The same

Many companies use evalua-tion forms filled out by the par-

ticipant to determine the effectiveness of management training. Others are also debeting whether to interview other people in the trainee's depart-

On one side of the debate is Bank One's Shaw.
"Talking to the manager's manager often leads to inaccurate perceptions. He isn't out in on. He only sees whether the job is getting done and whether the reports are on time. He says, T don't see a whole lot of people outting, so it must be OK."

On the other side, Prudential-Bache's Triolo says he is consid-ering conducting interviews of the manager's employees to state effectiveness. The evaluate

the idea, Triolo says, but the tion need to assess the effectiveness was of the training may override per eir concern. Prudential-Bache's Bigham

rates management training by how useful the skills are to his situation. For example, he says he knew he was skillful at getting people to do things his way, but he didn't know why. After taking a course in managing work rela-

hips, he disco was unconsciously flexing his personality style to accommodate the style of the person he

dealt with "Many of the things you learn in management training you knew intuitively, but you didn't know why they worked," he says, "Once you find out why, you can make them work almost every time." a

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Thoughtful mix of media provides best delivery

The ideal MIS training program would in-clude computer-based courses for technical subjects, interactive video systems for cific project skills and dynamic seminars led by popular man tants for complex busines

However, few organizations can afford such an ideal combination of training media. For example, hiring an outside con sultant to conduct a traditional instructor

led seminar can cost up to \$1,500. Computer-based training (CBT) can cost substantially less, since courseware runs on existing hardware. Vendors provide personal computer diskettes for a few hundred dollars per course and sell mainframe-based products for the price of cost to develop an in-house CBT system can range from \$2,000 to \$20,000.

Combining CBT with video, some companies are using interactive video instruc-tion (IVI). Because specialized hardware is required to run IVI programs, setup

costs can run up to \$100,000. "There are a number of trade-offs be-tween types of training. With CBT and video, the costs come from the development of the course, but delivery is relatively inexpensive. Classroom training is isst the opposite." says Curtis Plott. executive vice-president of the American Society for Training and Development.

Moving along, but slowly IVI is expected to become more affordable as the technology develops. Many combanies are expected to eventually replace instructor-led training with more interactive, individualized programs.

Training technology is proces a raming technology is proceeding at an incremental, rather than a revolution-ary, rate," Plott says, "Companies are morring toward moving toward sophisticated technols because they're cost effective

Evidence of this trend can be seen within MIS, particularly in technical training. Besides mainframe-based courses that allow users to duplicate a systems enare implementing PC-based courses to al-low individuals to learn at their own pace. However, CBT and IVI are not as fre-

quently implemented for managem training. Many instructors say that interpersonal skills cannot be adequately taught using a computer-based product. about the changing nature of manage

ment, it is harder to teach through technology," Plott says. "Management skill development is experiential and requires practice in dealing with groups of people rather than individually. The best way to offer management

skills to technical people is through an in-structor-led course that shows them on noner what will be covered and when says Terri Pawlowski, manager of techni-cal education for the Hartford Insurance Group.

At the executive level, technology is rarely used because senior managers de-mand a customized program. "Typically, executives are not the type of audience that sit in front of a PC," says Suzanne tak Training Corp. "They go to semi one dynamic is up there si

ing personal experiences. Another objective of the instructor-led nt skills workshop is to conmanagement states workstoply is to cur-vince MIS professionals of the need for training. "There is a tremendous amount of marketing that goes on," says Ann Bankead, training and organizational de-

velopment specialist for a bank in the Southwest. "If we were solely depending on CBT, that opportunity would be lost."

Descrite the desirability of interpersonal contact, cost-cutting programs are forcing MIS trainers to make some con

ssions in the management area. The set significant example of this trend is placing live speakers with video tapes. More affordable than instructors, vid-

eos allow for consistent presentation quality and guarantee that all participants crive the same message even if they at nd different viewing session Videotaping participants and then allowing them to view their performance is another cost-effective method used by many companies. "Dispensing information in the classroom produces one level

of retention; dispensing reinforced by vi-suals and seeing how to do it produces an increased amount; hearing, seeing and practicing produces an even larger amount of retention," Plott says. In the future, Plott says, IVI will be-

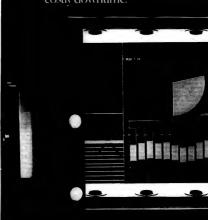
come as useful as video for management training. "It is a way to take the material

trausing. It is a way to take the material away from the classroom and practice."

Training vendors such as Deltak indicate they are planning to implement IVI in their professional development offerings when it becomes more affordable. active video is great for a tions and checking information," Ram-bach says. "It's like using a flight simula-tor. You practice almost crashing a 747 before you learn how to fly it."

MICHAEL SULLIVAN-TRAINOR

AT&T Power Protection Systems: Your best security against costly downtime.



VENDOR VIEWPOINT

Going from systems professional to manager means learning to live with some uncertainty BY STEWART STOKES

My client was a tems manager in a well-tems manager in a well-tems move company. He and I were discussing changes in the control his most difficult challenge, and consider without hesistating. The most a control his most difficult challenge, and consider without hesistating. The most

easy. No, it wasn't technical. It had nothing to do with hardware or software, but it involve communications - and I don't on unvove communications — and I don't mean data communications. "My most difficult challenge was mak-ing the transition from 'doer' to manag-er," the client continued, "and franky, I'm still working on it! Why is this so diffi-

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cult for us? I sust Delegating, the most important timedo with change and giving up predictabil-ty for ambiguity." Learning to live with uncertainty is only one of six key chalvs. certainty.

• Influencing people over whom you have no control; understanding sources of powlenges systems managers face as they make the transition from systems profes-· Understanding and analyzing moti

Countless conversations during the

sional to systems manager.

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ver disturbances, brief and imperceptible, cause very visible data loss, data errors, and equipment damage, all resulting in

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certainty. MISMANAGER

ciate differences in perception and the ways these differences influence behav-ior. This insight in itself helps resolve maor interpersonal commi

past 15 years have convinced me that past 15 years have convinced me that most new system managers confront six challenges as they make one of their ca-reer's most demanding transitions: • Developing management-mindedness; learning to appreciate the power of per-ception or the fact that not everyone per-

management strategy of all.

• Living with ambiguity, or uncertainty

Developing management-mindedne means learning to step outside one's tech-

nical orientation to see the big picture. It

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er and influence.

As a new systems manager told me, "I never realized how significant it was that my staff, our users and my fellow managers could all look at the same set of cir cumstances and understand them so dif-ferently. No wonder we seidom astree on a course of action.

Another aspect of management-min edness is learning to think conceptually to understand how the pieces fit together. Some senior information systems managers are currently both exhibiting and for tering this skill by educating their people about the business, its products, market channels of distribution and competition

The second hurdle, that of managing rather than doing, haunts some systems managers throughout their careers. They become managers because there were good "doers," but when they turn a career corner and become project leaders, their focus of accountability shifts They are now responsible for managing and coordinating the work of oth many of whom are actually outside their

New information systems managers often find this kind of assignment unbear ably vague. While their activities as "do-ers" had a degree of certainty and predictability, their managerial assignm are filled with ambiguity The lack of clear and concise as

was what bothered me," another client once confided. "I thought that managing meant controlling and always being in command. I soon learned there are few Continued on page \$13

Stokes is vice-president of QED Information Sci ences, Inc. in Wellesley, Mass.

What's so difficult about technical training?

BY PATRICIA CINELLI

ical trainers of data pro Technical trainers of data processing per-sonnel must wrestle with a number of challenges. Often, they are required to teach technical and end-user courses as must deal with a lack of support and inter est on the part of their students' manage ers. And what is worse, technical trainers often find themselves in a charmon with people who don't want to be there or ik they already know how to operate

country spoke with Computer-world about some of these chal-lenges. They were asked three What do you find is the me

rult aspect of technical train-· What kind of course is the big gest challenge?

• What sort of person makes the most

challenging student? Bill Milburn is a DP training specialist for the Auto Club of Southern California in Santa Ana. He researches, analyzes and develops training to be administered by mself and others. Müburn rer an entry-level training class built around PL/I as one of his more challenging teaching experiences. "Getting all the information together for a complete curriculum on a subject as complex as that is probably the most difficult aspect of technical trans-

Similarly, he says, the type of course that presents the biggest challenge is one

for which he has no prior knowledge and has to learn about the topic. "We seem to he one of these companies on the leading edge and are always pioneering sor thing. Even in the PC area, we can't set for a program like Wordstar. In-

stead, we purchase an all-encomsing modular approach like the Personal Decision Series. which no one anywhere teaches. That means I have to learn it from manuals and from IBM

The type of student nts the greatest challenge is one who is not attendi the course voluntarily — "t

one who is there because his boss said, 'You must learn this,' "Milburn says. sultant and executive assistant to the associate commissioner of systems at the

Massachusetts Department of Public Welfare in Boston Before taking that post, she trained data processing personnel in the department for six years.

According to Donohue, the most diffcult aspect of technical training is putting the right people together with the right course at the right time. Often within the

ne course, she says, some students find the material too simple, while others find e lack of commitment technical training

receives from students as well as their gers. "I'm not sure if their bosses em out of class or don't let them at nd or if people sign up for courses and don't really expect to go, but the actual at- says. "Even though a class is set up ahe tendance in a course is usually less than the number who have signed up for it," she says. Donohue has some

ideas about why this happens. "Training," she says, "tends to be seen as a benefit and not as part of the job The kind of course that pre sents the biggest challenge, ac-cording to Dosobue, is one that

attempts to provide technical people with skills like writing or gement. She has found, she say that technical people usually enjoy and want to strend technical training courses, but interesting them in training

that covers softer and skills takes some work Two types of people can be difficult as stuindividual who has been in the business for a

a great deal. Often, she says, people like this are trapped in habit and really don't want to learn anything new. On the other hand, she adds, those just out of school can also be difficult to teach because they equently suffer from the illusion that they already know everything. Chuck Bell, advanced training instruc-tor at Marathon Oil Co. in Findley, Ohio,

says the low priority accorded to training is particularly frustrating. "People find it ard to set aside time for the courses,

dance at the course with their own projects and make it difficult for e ployees to take classes at that

Teaching courses to audi-ences of varying skills and interest levels is particularly chal-lenging for Bell, who says end users often show up in classes

dominated by technical people.
"It becomes a challenge to get
working examples throughout the course
to cover the needs of varying kinds of stu-

Bell's notion of the two types of stu-dents that present different chal-lenges includes the introverted student who does not actively participate in class and the inquintive, aggressive standard When someone is quiet in class and doesn't ask questions, I don't know if I got through clear-ly or have blown him away. On the other hand, the person who

continually speaks out in class stretch my ability and makes me grow." Bob Hargrove, security and contingen-cy planner at the University of Texas ealth Science Center in Houston, has en conducting technical training classes for about six years. One goal he has yet to accomplish, he says, is that of making ning a planned and integral part of the

velopment process.







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Computer-based training. Visiteractive video instruction

The companies included in this chart responded to a recent telephone survey conducted by Computerworld. Further product information is a validable from vendors.

Technical

FROM PREVIOUS PAGE

courses. Hargrove explains.
"When they want a course, they always want it yesterday." Instead of treating training like a vigilante operation, he says, managers should incorporate assessment of training needs into performance evaluations.

miningers indust the opportunities and opportunities. The biggest hursle that Hargove says he encounters with courses has nothing to do with courses has nothing to do with coursest. It is related to poor paint of the properture of the properture

The type of student that Hargrove least likes to have in his classroom is the computer scientist. "Computer scientists know no language except their own," he says, "and they have a mind-

he says, "and they have a mindset about everything."

How much is enough?
Figuring out how much is enough is one of the trickiest

Figuring out how much is enough is one of the trickiest parts of a trainer's job, according to Bernie McGinley, data center education coordinator at Pittsburgh National Benik. Students come to McGinley's classroom with differing needs, and tailoring the training to a varied audience can be difficult. For example, he says, "when

we install a new software package, some who take the class need to know the finest details about the package, and others just need to know the barest facts."

just need to know the barest facts."

Lack of turnover in his industry — in which the average stay

of operations personnel is 15 to 20 years — contributes to the difficulty of technical training. McGinley says. People master a certain set of skills and tend to develop set potterns of thinking and working during the course of several years. "All of a sudden," he says,

"we bring in an IBM System/88 [mincomputer], and people have to learn all new skills. It as tremely hard to transfer from their base of knowledge to this new machine." Training students to break out of established

dents to break out of established patterns "is the type of course that's hardest for me to teach," McGinley adds. Motivating the "unconscious-

mouvaing the unconscious ty competern" student presents McGinley with his greatest test as a trainer. This type of person has so thoroughly mastered the skills needed to perform his job that he can perform them almost without thinking about it. "Trying to make him curious and ex-

cited about learning something new is the biggest challenge." Continued on next page

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Technical

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For Barbara Stears, supervi For Barbara Stears, super-sor of computer-assisted in-struction at McDonnell Douglas Corp. in Hazelwood, Mo., identi-fying an ever-changing set of needs and arranging for appro-priate training in a timely fashion in the biggest obstacle. Often, by the time such training is found,

the time such training is found, "the need and the environment have changed," she says. Compounding the problem is a lack of commitment to training on the part of management. "People begin the training and then are pulled out by their own management. Usually they are pulled out of the course to deal with short-term emergencies, which might not necessarily be the best use of their time."

Although occasionally provoked by the young upstart who

thinks he knows it all, Stears says she is inclined to make allowances for this category of stu-dent. "That person is often the type who tries a lot of new things and has an open mind," she says. Ultimately, it is the person who has "a set way of doing things and doesn't pay enough attention" that Stears is least pleased to find in her classro

Can't be bought Connie Perren, education coor-dinator for the DP department at the University of Texas medical branch in Galvaston, has been teaching and developing training for almost five years. Before that, she worked as a program-

Perren echoes Stears' experi-ence that finding training in a timely manner is the most difficult aspect of her job. "Some of the education is not something we can buy. We either have to develop it in-house or learn it on our own," she says. And beco ing an instant expert is not easy, she adds.

Courses that are of strategic importance to the department and require in-house experts to teach applied theory, as opposed to simple operation, are a partic-ular trial, Perren says, since the training has to wait for a time when that person can be spared

from his regular job.

DP managers enrolled in management education classes make the worst students, Perren make the worst students, Perren says. "For some reason, they don't usually apply good man-agement techniques back on the job." Students are expected to apply technical skills learned in a classroom to their jobs, Perren adds, but "softer skills are left in the classroom."

the classroom.

In an "Effective Com tion" class, for example, "a significant majority of technical folks and management folks don't think it's worth it to apply the materials learned in the

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Uncertainty FROM PAGE S9

ers and that the only cer tainty is lack of certainty. Man-aging is certainly situational. What works once doesn't always

Many new systems max Many new systems managers are control oriented: They have a high psychological need to control events and people. While this may work well for individual contributors, it does not work for new managers, because problems at lower managerial evels are often better solved through "soft" influence strate-gies than through "hard" con-

Be a delegator The third challenge — delega-tion — requires that the manager relinquish control, which is of ten a highly threatening prospect. Delegation is one of the most difficult managerial skills to execute well, and much

time is lost on sloppy attempts.

There are a number of ways to improve your delegation skills

 Decide if the job, task or as signment needs to be done at all.
 if it does need doing, review your people and decide who can carry it out most effectively.

Set a realistic time frame.
Explain to subordinates exactly what is needed and inform them of any deadlines.
Make sure everyone knows and agrees on the limits of suthority you are granting. Don't

We have already discussed the fourth hurdle, that of learning to live with ambiguity. This is a stumbling block for many sys-tems managers. The key to success is being willing to admit that we cannot always control others. that events often seemingly take on lives of their own and that an-swers to people problems are usually more difficult and unpredictable than answers to techni-

cal problems. Which brings us to challenge No. 5 — understanding your sources of power and influencing those over whom you have no control. Systems managers of-ten ridicule those "soft" skills that are most necessary when that are most necessary when managing outside one's span of control. When we do not possess positional power, we mast influ-ence through respect, knowl-edge, insight, information, vi-sion, trust and confidence. These are qualities that new sys-tems managers must cultivate if

they are to survive and become The sixth and final hurdle is often the highest of all: under-

standing and applying motiva-tion. Motivation is the stimulus to action, the incentive to do Continued on next page

Management training for DP

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County Asset Printer

The companies included in this chart responded to a recent telephone survey conducted by Companies and Provide conduct information in surface and the Companies and Compan

Uncertainty FROM PREVIOUS PAGE

omething and behave in a cer-

As another client told me,
"What makes me tick is the opportunity to achieve something
of value — to accomplish a result
that will be visible to others and
significant to them and to the
company. I'm not turned on by
working closely with others, but
I need to be more flexible about

this now that I'm managing.

"This freedom and discretion when planning and carrying out my activities, and I'll try and provide this for my people." the citer added. "Because I value achievement, I appreciate timely and specific feedback about how I'm doing, and I'll try to provide

"Do I know what motivates each of my people? No, but I'm going to learn as much as possible about them, because the more I know, the better we'll

The secrets to motivation. As new systems managers learn about motivation, they realize it is not a medicine they administer to others. It is a combination of personal attributes that — when understood and acted upon — will cause people to achieve far beyond normal expectations. The motivation-burdfe is high, because it is often easier to assume we know what motivates others than to invest the time people as individual and belong them satisfy their inner needs and desires.

Here are six suggestions for developing excellent information systems managers. Coupled with an understanding of the with an understanding of the safety as well as others.

Be as sure as you can that your new systems managers want to manage and are not feeling unduly pressured to do it. The more pressure, the more stress, the more stress, the

ess the performance.

Whenever possible, provide good mentors. Coaching is an art; invest in it.

Involve managers of managers

art; invest in it.

• Involve managers of managers in the development process.

This provides the reinforces.

ment, motivation and security to apply new skills.

• Focus on the values, changes and shifts in motivation required when moving into management, and influence the work environ-

and influence the work environment to support these changes.

When you send your new systems managers to management education courses, be sure they know why they are attending.

Try to sense when your new systems managers, are ready to learn. For many managers, this is after they have been managing

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Fast track

FROM PAGE SS

well eisewhere just aren't going to do well here. The fit of the individual to the environment is important in our hiring process.

Do you turn away people who are technically profi-cient but lock an interest in business training? That really depends on the posi-tion. We have people in voice and tion. We have people in voice and data communications who don't take the business training. But they are quite unusual. For the most part, people do have to have an interest in the business.

Who participates in the advanced training? That is open to the staff. All the people who have come through the six-month training program, people we have hired to fill cer-

tain positions and experienced staff members attend those courses.

How do you address the different needs of the on-try-level group and the experienced stuff? We meet with every person as they come into the firm and re-view their background and iden-tify what skills they will need. Then we create a training cales

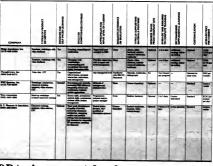
Do technical people re-ceive recognition for their proficiency, or are the top positions reserved for business people? We have a technical career path

We have a technical career path as well as a management career path. We pay out technical people were part. We pay out technical people were well. We have an IBM 300H power of the first Model 6000 that rolls out. We write software for internal use that is sold on the outside, so people take significant pride in their technical work, and that work brings in dollars to the firm.

How high does your tech-nical career path go? The head of the information systems department is a principal of the firm. He will probably make

managing director this year, and that is one of the most senior po-actions in the firm. The telecommunications head is also a princi-pal and is on his way to becoming a managing director. Technical people can rise to very senior po-

Can they rise to high-recognition positions without becoming a memosper? Probably not. You can rise to quite a significant role without being a manager, but you will be capped off. The cap is at the project manager role. Project managers for example, often are paid \$100,000 years at our firm. It's unusual, and those are not the majority, but it does occur. the majority, but it does occur. •



DP trainers must develop a high tolerance for heat BY JANE STEIN

nology consultant Michael mer has called "the bot an uncomfortable perch located at the intersection of technology, the people who use it and the business purpose for chit is deployed. Hummer's description sug-

gests that the first quality a good DP trainer must have is a high tolerance for heat, and few in the field would disagree. A competi tive business environ creasingly dominated by the win phenomena of strategic systems and end-user computing, generates a lot of heat, and those who are overly sentitive have stly sought cooler resting

The definition of a good DE trainer must start with superior classroom skills. For hottomline competence, a trainer needs subject matter knowledge comwith basic transmittal. Truly gifted teaching, however, is a matter of attitude "A trainer has to have genuine ss, an absolutely over-

Stem is editor of Data Training, a Box tre-based monthly rehicution for DP

whelming need to give out infor-mation," says Ralph Desmood, a Boston-based free-lance trainer and consultant. "You want to and consultant. 100 make have somebody who would make rally terrible poker player." Because of the sheer numb of areas a DP trair address — microcomputer soft-ware packages with their neverending updates and revisions. DP subjects for everyone from

ations development pro-ners to technical support eople and, in many companies, soft skills" such as communica-- flexibility is another essential characteristic. The majority of today's DP train must be able to handle a variety of topics with authority

Trainers cannot be satisfied rith simply knowing the technology; they also have to be able to relate it to the business it serves. "It's not enough to teach button-pushing" is an exhorta-tion heard so routinely these days in reference to end-user ning that it's in danger of sliping into cant. The responsi for desktop computing's inability to as yet fully deliver office productivity gains is often laid, at least partially, at the feet of

trainers - and not unfairly so.

Facility with the ins and outs of the myriad features of Lotus 1-2-3 or DB2 or a fourth-generation language is a nice beginning, but the potential of end-user computing lies in the creative apoli-

PTRAINERS occupy a somewhat nebulous snace between troops and management. The good DP trainer will play that position for everything it's worth.

cation of those features to busi-

m purposes. With one foot in each world, DP trainers are in the best position to combine a thorough un-derstanding of the features and obilities of the technology with knowledge of a company's business needs and procedures. A good DP classroom instructor therefore is one who will also take the lead to suggest ways business users can apply the

ol's never or What happens in the classroom, though, is only part of the job Excellent trainers do oot limit themselves to looking around for problems to which they can apply a training solution. DP train ers occupy a somewhat nel technology at hand to get a new angle on an old business problem ice between troops and man ment. The good DP trains

in the marketplace

w business strategy.

What about the DP classror

tude and approach to the com

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technology permeate the sching of even the most arcane

she finds her best DP trainers to

be those who have "been in the

trenches actually working with the systems." As she sees it,

illiterates, we're not going to meet our users' needs, and our

pany's not going to make it

the business. If we have busin

We have to train our people in

their classroom role, DP train

will play that position for every-thing it's worth.

Because of the visibility of are the most appo rent source of general technical support, even out of the classroom. They are ought out to answer ques

straighten misconceptions and solve problems in a wide variety of technology-related areas. Therefore, they have to be good inteners, and being a good listener means being a good diag-nostician, with a quick eye for or-

It may come as a surprise, but a superior DP trainer is also one who can look away from the course catalog and realise that more and better training is not the answer to every problem. What may seem on the surface to be a failure of training often turns out on closer inspection to be something else altogether — poorly designed work flow, inap-propriate tool selection or low morale. The ability to recognize
which is which is a crucial skill.

Once the diagnosis is made, it mains to convince the powers that be to apply the remedy. And here's where the DP trainer has to become a politician. Just as programmers can't hide in the computer room forever, DP trainers can't be effective if they or even to initiate an entirely ait in the training department broading over their class ros-ters. Another requirement in DP training, then, is to be proacti

itself? Here, the mandate is to transform the single-minded Ineffective trainers can often be heard complaining that train-ing is the waliflower at the cor-porate dance; it will surely ever techie into a contributing busi-ness partner. The DP traines may teach business writing skills, consulting skills and ever be if the training function is con-tent to wait for an invitation to basic interpersonal communica-tion skills to technical people. But this responsibility is not ful-filled by scheduling an occasional the dance floor. But the DF trainer who wants to take an initiative posture rather than a re-active one had better have solid half-day course in business or ication for program political skills s. It requires that this atti

One DP training manager de-ribes this approach as "a little bit of couniving," although oth-ers would prefer to say mice-manship. Whatever you call it, Despite the business orienta-tion, Mary Texer, supervisor of training and administrative ser-vices at the Federal Reserve ective training strong interpersonal skills, the saving merpersons sails, the ability to learn and use manage-ment's language and an instinct for the interplay of formal and in-formal channels of communica-tion and influence. Bank of Minnespolis, sounds a common theme when she says

A good DP trainer, then, is a techniciam, an evangelist, a busi-nesaman, an analyst, a counselor and a politician. Some of these les are contradictory, so we have to add a postscript: A good DP trainer has to be something DP trainer has to be something of a chameleon. That "really terrible poker player" who ener-gites a classroom has to be able to change gears on demand and with equal facility, play cards with the experts or sling techni-

with the experts or sing techni-cal and business jargon. The final word comes from Federal Reserve's Texer. A non-negotiable requirement for be-ing a successful DP trainer is, she says, a good sense of hu-



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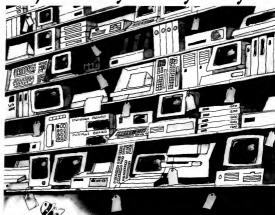
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	Sept 21	Hardware Roundup: Large & Medium Scale Systems	Sept. 4
ı	Sept 28	Hardware Roundup Small Scale Systems	Sept. 11
-	Oct. 5	Mardware Roundup: Marron	Sept 18
	Oct 12	Leasing & Used	Sept 25

Workstations

CONTINUED FROM PAGE 79

one monitor.
"All finan hting a MIPS battle on the deak top," iden says, referring to processor speed, which is typically measured in mil-lions of instructions per second (MIPS). "They're all so reliant on technology. If a company can identify an opportunity five nitutes before the guy down the street, it

will make more money n has carved out business with more than 30 financial services customers, including nine of the 10 largest securit panies and a variety of value-added ellers and systems houses. One of

Sun's major deals was with Quotron Sys-tems, Inc., which recently signed an OEM agreement to market Sun-3 workstations

with its financial information systems.

In its fincal year ended June 30, Sun sold about \$15 million worth of equipment to the financial services industries. ment to the financial services industry. The company expects to at least double that amount during the current fiscal year, Golden estimates. "It's the fastest growing market within our various busi-ness segments," he says.

Breaking ground
One of the earliest adopters of Sun work-stations was Kidder, Peabody & Co., which last year replaced its IBM PC ATa with Sun 3/50 entry-level worksta uls trading area. In formula trad ing, a trader uses a workstation to scan the market for price aberrations and then

use unsuet for price aberracions and their send trade orders to the trading floor.

"We had been using ATs for 1½ years and had become intolerant of them because they were not fast enough," says Paul Sobota, a Kidder Peabody vice-president. "We needed multitasting and multisser capabilities, and there was nothing around until Sun."

market Vision Corp., a New York-based provider of computerized trading analysis and information services, recentty ported its system to run on Sun work-stations as well as on the IBM RT PC and Compaq Computer Corp. micros. "Advanced planners at all the brokerage houses feel the key point is that you can get more information for trading in less time with greater clarity," notes William Adiletta, vice-president of enginee "That's very important to a Wall Si

m'a success."

Apollo, which only started selling into Agollo, which only started selling into the financial services market within the last year, counts Salomon Brothers, Inc., Morgan Stankey & Co., First Boston Corp., Citicorp, The Chane Manhattan Bank NA and Manufactures Hanover Trust Co. among its major customers. Like archived Sun, Agollo has also focused on securities trading, banking and expert systems development. The

nsford, Mass., firm has also we of business with packages tailored for fi-nancial services to handle office automation, data management and netw

Apollo expects that between 3% and 5% of its overall revenue will come from the financial services business next year, according to Frank. That could be \$10 milion to \$30 million, he prejects. Frank notes that a key test for Apolio and other workstation vendors will be pending auto-mation contracts for stock exchanges in Chicago, London and Toronto.

Sniffer CONTINUED FROM PAGE 79

and the future of privately held Network General — hinges on convincing users that the product will pay for itself by keep-

ing their networks healthy nal claims that users tend to a ically buy an expensive component — such as an Intel Corp. 80386 server or a

new bridge — to fix a network response-time problem that may not actually be the fault of the network.

Establishing where the fault lies, par-ticularly on a multivendor network, is the Sniffer aspecialty. Users at Amoco Corp., for example,

were running transmissions between an IBM MVS host and a VM host via Fibronics International, Inc. front ends, Pro-teon, Inc. gateways, another wendor's T1 iplexers and yet another vendor's smet LAN. "It was very slow; at certimes data couldn't get through at "Seal says. The Smiller determined that the use of

only one box was inadequate to handle packets coming in at high speed during busy times. "At least an interim solution was to expand that box's buffer size." Saal

To avoid tying the Sniffer to one network architecture, Saal has been steadily diversifying the product; it now supports the IBM Token-Ring network, Ethernet, Starlan and Datapoint Corp.'s Arcnet. Currently, vendors make up a large portion of Network General's revenue. "Virtually every computer and communi-cations company — including DEC and IBM — has at least one Sniffer," Sail says. Last week, Data General Corp. anmounced an agreement with Network General under which the two companies will jointly develop Saiffer to support DG's Startan and Ethernet network archi-

But Saal says he has high hopes for Sniffer sales through direct and indirect channels to users. Bridge Communica-tions, Inc. and Micom-Interlan, Inc. are both said to be planning to resell Saiffer to users, as well as to use the product inter-"We think the market is not ver

"Computerworld's BUY-SELL-SWAP section is this industry's Yellow Pages."



Phil Thomas is President of Thomas Business Systems of Bocs Raton, Florida. Thon stimes Systems buys, sells and leases new and used IBM, DEC and Data General equi-bry's bose doing so for 10 years.

In that time, Phil has used many methods of getting his mess He's advertised in several publications off and on. But for 10 ye (an average of once every two weeks) in Computersorid's BUY.

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Read-Rite cans top managers, lays off 100

BY JAMES A MARTIN

MILPITAS, Calif. - Read-Rite Corp., the troubled than-film bead supplier to hard disk drive manufacturers such as Maxtor Corp., recently fired its top man-agement staff. Additionally, the firm laid off some 100 employees, more than 20%

The company has been experiencing significant manufacturing problems since May, which have resulted in shipment delays for Maxtor and others that use the Read-Rite head for their 380M-byte, 514in, hard-disk products.

Read-Rite's problems, however, are not expected to significantly affect those rendors that offer minicomputers, engithe high-end thin-film media h disk drives

In-house disk drives Some 15 vendors currently use that te

nology, including Apollo Computer, Inc., Digital Equipment Corp., IBM, Texas Instruments, Inc. and Floating Point Sys-tems, Inc. But many of those vendors make their own hard disk drives and components for internal consumption, accord-ing to Dennis Waid, an industry analyst

with Peripheral Research Corp. in Santa Barbara, Calif.

Maxtor, Micropolis Corp. and others that buy the critical hard disk drive component from Read-Rite are experiencing emporary declines in product shipments,

Maxtor, for example, recently said it expected to lose \$20 million in revenue as a result of the decrease in Read-Rite's Although Read-Rite is only one of a handful of thin-film head suppliers, one of its competitors, Peripheral Components International, Inc. in Minneapolis, has

Other staff cutbacks have focused on manufacturing and administrative per-

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ty and is expected to help fill the void.

Another alternative for hard-disk mak-ers is to use the less expensive, more con-ventional hard-disk head technology in place of the newer, and more difficult to

New team being prepped John R. Osborne, a Read-Rite founder and chairman, and President Wade Meyer-cord have been forced out, sources said, and a new management team is being out together by the company's financial back.

Read-Rite officials were not available

NICKELS DIMES

ced that rev Honel Corn son the second quarter ended June 30 in-creased 39% to \$47.6 million from \$34.2 million a year earlier, when results includ-ed \$3.2 million from software operations since divested. Profits from continuing operations before an extraordinary credit were \$4.1 million, or 24 cents per share, up from \$3.4 million, or 20 cents per are, in the like quarter of 1986

Wyse Technology announced revenue for the first quarter ended July 3 of \$80 million, compared to \$52.6 million in the vious year. Profits were \$5.7 million. or 44 cents per share, compared with \$4 million, or 34 cents per share, in the like period a year ago

Compugraphic Corp. announced reve-nue for the second quarter ended July 4 of \$91.6 million, compared with \$83 million a year ago. Net income was \$2.6 milli or 31 cents per share, compared with a net loss of \$1.8 million, or 22 cents per

Software AG Systems, Inc. reported Software AG Systems, Inc., reported revenue for the fourth quarter ended May 31 of \$19.5 million, compared with \$18.7 million last year. Profits were \$2 million, or 35 cents per share, compared with \$1.9 million, or 33 cents per share, in the

Convex Computer Corp. announced revenue for the second quarter ended June 30 of \$16.7 million, compared with \$9.1 million in the previous year. Profits were \$2.2 million, or 12 cents per share, compared with \$920,000, or 7 cents per share, reported in the comparable period

Sterling Software, Inc. anno revenue for the quarter ended June 30 of \$46.7 million, compared with \$56.5 mil-lion in the comparable period in the previ-CHAS YEAR

Profits were \$1.7 million, or 17 cents per share, compared with \$2.1 million, or 20 cents per share, a year ago.

Policy Management Systems Corp. announced net income of \$6.5 million, or 25 cents per share, on revenue of \$43.6 million for the second quarter ended June 30. This compares with net income of \$4.7 milion, or 20 cents per share, on revenue of \$35.2 million reported in the



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"DP training allows people to use all their skills and communi-cate their experience to others," says Bill Milburn, data processing training specialist at the Auto Club of Southern California, "It's also a good background for any

Many data trainers move on to management positions in other DP or user areas. This movement keeps the trainer from burning out in the long run. fore important, as trainers ro-ite into management positions, companywide training tends to

many companies as people con-tinue to move up the ladder. Technological changes are also

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or title to the

There will always be a need for primary entry-level train

and upgrading of analytical differential as a severe drawback skills," Milburn says. "Right to data training. Also, other than now, however, the thrust for PC moving up the management lad-and end-user training is much der. training growbes few others

training is the primary entry into the data training field currently and will continue to be for the

next few years. 'A lot of exciting things are happening in end-uner training," says June Stein, editor of Data Training magazine. "That's probably the growth area bese hard-core DP has not inged a lot. Technical DP ng will continue to become

more critical and have a higher level of emphasis in the future." Earning expectations Salaries for DP trainers fluct

iding on the nature of the ag. For inc лсе, сопри er-based training (CBT) matruc-tors need "extensive qualifica-tions and get minimal dollars tions and get minimal doubt's — rarely above \$35,000," asys Travis Piper, president of Cre-ative Approaches, Inc., a CBT vendor in East Bloomfield, N.Y.

Most other trainers are in the ame bind, with average earn-gs between \$20,000 and \$40,000 per year, usually far less than their programmer/analyst counterparts with simil

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and porting, device driver, and system call

Many people see the salary

In addition to different levels of trainers, there are differences among target populations as well. For instance, some trainers are responsible for just program-mer/analyst training, some for the entire DP department and

career paths.

"Where do you go from
there?" asks Linda Rode, president of DP Training Resources
in New York. "Just as not all prost, they have to have commo

technical background to business problems and has a flair for teaching would have a good opportunity in this field

OMEONE who can apply a good

JANE STEIN DATA TRAINING MAGAZINE skills,

they need a logical mind

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training, these three traits are standard for all DP trainers.

cal skills crucial

rtise is also a ne-

trainers may not be good as man-agers, either. And finding other opportunities may be difficult." While there may be drawbacks, data trainers also szy there are currently many oppor-

grammer/analysts neces

nities within the field.
As Milburn says, "Eighty perent to 90% of the companies across the U.S. have data trainers of some kind." Data train istrators (who order and track vendor courses) to training ecialista (who evaluate, des

cessity. In fact, some give tech-nical skills top priority. "The d deliver training) to data

Because of this diversity, spe-

Because of this diversity, spe-cific qualifications for data train-ers vary with the position, but there are some common points. Piper looks for three things from candidates for jobe to devel-op CBT courses. "First and fore-

ter's degree in education. Whether or not formal credentials are expected, "some grounding in learning is benefi-cial, as is an affinity for teaching," Stein says. Rode adds that trainers should possess some experience in classroom techniques, "which

might not come to a person intu-Companies also want tree especially with some background in inwritten," be says. "Secood, they need project control skills for course scheduling, handout de-

and communicator, but above all, he needs extensive experie with the product," Rode says.

Many companies require their trainers to have three to

five years of experience with any

given product.
"Someone who can apply a

good technical background to

ments are not strict. Some com-

panies do not require a degree at

while others require a man-

teaching would have a good ortunity in this field," Stein

structional, or course, design. As one trainer says. "A lossor instructor can get by with a wellvelopment and so on. And third, designed course, but an excellent instructor still muddles Whether a person is develop-ing CBT or delivering stand-up through with a poorly designed

Above all, the interaction with the students is the most im-portant aspect of the training. 'If you enjoy people, this can be an enormously gratifying profes-sion to move into." Rode save.

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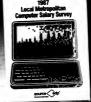
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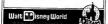
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Computerworld Stock Trading Summary











High times

IBM, DEC, Compaq join crowd reaching yearly highs

wed last week, a strong m

a strong marks when the strong marks were proposed to the strong marks and Digital Equipment Corp. were both among those resulting one whigh for the Thurnday. Bill dissed at 174%, 1919 points in four trading days, while DEC rose this points to 1844. Compact Computer Corp. was one of the industry's best perdured to the computer of the trade of the control of the Thurnday 1919. Apple Computer, Inc.

ket, rising 2% points to 51%, its h stock split earlier this year. Other

Spectrum bears business fruit

HP ships processors to customers, enters non-HP terminal field

BY JEFFRY BEELER

PALO ALTO, Calif. - Hewlett-Packard Co. this week will begin shipping limited quantities of the first business-oriented by-prod-uct of its Spectrum development

rject. In addition to that ann nt last week, the company de its first foray into the non-HP terminal areas with the in-troduction of display units for IBM, Digital Equipment Corp. and general-purpose ASCII envi-

ronnents.

A company spokesman de-clined to specify the number of units in its initial batch of HP 3000 Series 930 departmental processors and would only idenone customer, a software de-oper and reseller of HP sys-

ASK Computer Systems, Inc. in neighboring Los Altos, Calif., is scheduled to take delivery of a 0 later this week. David Sohm, the firm's vice-

or will join the existing The \$575 DEC-compatible Model 22, which underselfs HP 3000 Series 58 and three Series 70s in developing and sup-DEC's VT220 by 22% porting the 19 integrated mod-ules of ASK Computer's Manman line of manufacturing-. The Model 41, which, with its \$375 price tag, reportedly ranks among the industry's least ex-

d of a ch This week's shipments to ASK and other selected HP hardware

ers close a long and often bled chapter in the 930's ory. Introduced in February 86 and embodying HP's un eventional Precision Architec ture, the machine was schedul to become available in limit quantities by the end of last year but was delayed first to mid 1987 and later to this month. In the terminal arena, HP in

troduced the HP 700 family of y units. Included in the new HP 700 terminal line are the fol-

The Model 71, an IBM-c patible product priced at \$695, 45% less than IBM's 3191 Mod-

Tandem PCs lashed to

Nonstop CPUs

BY JEFFRY BEELER CUPERTINO, Calif. - Tandem Computers, Inc. today is expect-ed to extend its IBM-compatible ve general-purpose ASCII workstation line with the an The Model 92, which, at \$895. replaces and sells for 35% less than the existing HP 3000 se-ries-compatible Model 2392 ter-

nouncement of seven persona computer models built around Intel Corp. 80286 and 80386 my croprocessors. Members of the Tan PSX/200 and PSX/300 work

tion families complement the company's existing 6AX series of IBM Personal Computer AT-compatible desktop devices. The compatible desistop devices. I se PSX machines are intended to serve primarily as intelligent ter-minals in a network bulk rerund Tandem's Nonstop family, ac-cording to Jim Pawlik, product manager with Tandem's Micro Products Division. To tailor the workstations for

a Tandem environment, the sys-tems' features include the fol-

· Software that allows the deal top units to com Tandem hosts by emolating the vendor's Model 6530 terminal.

• A capability to transfer files be-tween Microsoft Corp. MS-DOS 3.2-based workstations and Tap

dem's Guardian system. The PSX models also support ANSI 3.64 terminal emulation to with Tandem's recently intro duced Unix-based LXN distrib-

uted processing system.
On the 80286 side of the PSX introduction, Tandem is offering five models, ranging from the PSX/200, a diskless unit with an 8-MHz microprocessor that is priced from \$1,195, to the PSX 240, which has a 40M-byte hard disk and a 12-MHz CPU and it priced from \$3,795. Filling out that line are the Model 201, which starts at \$1,395 and lacks a hard disk, and the 220E and 220, which both have 20M-byte mass-storage subsystems. The \$2,395 Model 220E runs at 8 MHz, and the \$2,995 Model 220 operates at 12.5 MHz. On the 386 side, the \$4,895 PSX/340 and the \$5,695 PSX/370 both use the same 16-MHz micro or but have different rd-disk capacities.

Play it again

stry matures. A survey conducted by the Data Proce gement Association in No-er 1986 found that 42% of that group's members are more than 40 years old and that 20% are over 46. In addition, MIS professionals are taking advantage of too-good-to-be-true earnent incer mies seeking to thin out

Too good to refuse Oldenburg admits he "never really thought about retiring" from his MIS director position at Chevron. But when the oil indus try hit a slump last year, he found be could not resist an early re-Since he retired in December

1986, Oldenburg has continued his active involvement in the industry. He recently returned from Italy, where he taught a two-day MIS seminar for 35 of the country's top businessmen. This fall, he will begin a part-time teaching assignment in MIS at the University of California at

Serkeley. Oldenburg says he enjoys jug-fing a plateful of activities with gling a posteru or accurace was his time. And he bossts that he can now go to his mountain cabin on a Thursday, for example, in-stead of waiting until Saturday "I'm really enjoying myself," he says. "I have flexibility to do the things I want to do.

The throng of MIS directors aving the job ranks yet remain-

ing active in their professions is good for both them and the in-dustry, observed John Kallelis, vice-president of ARA Services, Inc., a Philadelphis-based manservices firm. With a alth of experience in planning and technology, these new reti ees are able to dispense practical advice rather than spout theory.

Roy Dickson, former chief in-formation officer at Phillips Peum Co. in Borger, Texas, and there for 33 years. Dickleft in June 1986 under an ly retirement program.

"I =m not quite 53 years old



and I thought then that this would be a nice opportunity for me to do other things," Dickson recalls. His retirement did not inst long. A month later, IBM flew Dickson to New York to attend a management meeting. Harvard University's Business School also asked him to give a ecture on cost control in data ocessing. Dickson today runs Dicks

an MIS consulting firm. Half of his time is spent for

g marketing strategies for industry vendors such as IBM. The rest is spent consulting with large user corporations, including Illinois Bell, American Airfines and Equitable Life In-surance Co.

The introduction of Models 71, 22 and 41 marks the first

e in HP's 12 years as a term

time in HI's 12 years as a termi-nal maker that the firm has of-fered display units for customers of other vendors' hardware, ac-cording to company sources. Along with the terminal an-

had cut by 36% the price of its HP 9000 Model 318M engineer-

ing workstation. The new price

ing wareststen. 1st new proces is \$4,990. That pricing change accompanied the introduction of four additional models that start at \$12,950.

nent, HP announced it

Not ready yet
"I was not ready to throw it all
away," Dickson says of his decision to go into consulting. don't think I will consider real re-tirement until I am shout 60. For now, I enjoy the insues and prob-lems of managing technology, and I want to be able to use my

Consulting is a prevalent se d-career option among former IS managers. Many say they dreamed for years about sched g their own hours and being their own bosses. But many also acknowledge the inherent dan-ger of jumping back into the rat race too soon. Jack Lanahan, 73, served as a

consultant for three years after retiring from his job as MIS director at Inland Steel Co. Lana han says he "got into consulting to taper off from the full-time job. After I retired in 1979, I didn't just want to drop every ng aitogether. wever, Lanahan soon

found he was spending every sixth week on business trips. He ired permanently three years er and now lives in Santa Bar-

Irvine, Calif-based Ken Gar-rison, 59, says he also hoped that his consulting work would give him the luxury of managing his own hours. "When you are a conat, you have to fit your hours to your client's be requirements," explaine former vice-president of tion systems at Pacific Mutu al Life Insurance Co.



When he started Kenneth T

Gerrison Associates, many of his contacts were insurance industry clients based on the East Coast. Garrison says that al-though he enjoyed his new ca-reer, traveling and working long hours were rapidly turning re tirement into a full-time job.

"To manage your time, you we to schedule your fun activities and make them just as im nt as your consulting," he dds. "It's too easy to become a worksholic and wind up straying far from your original plan." For some MIS managers, the

ransition to retirement is the efficult part. MIS managers at Fortune 500 companies typically work 10- and 12-hour days, di rect departments of several but dred employees and handle responsibilities that affect the ration's bottom line.

Waking up in the morning to

one of those duties can he hard or those who thrived on their

"When you have worked for 33 years, adjusting to retirement is a struggle," Dickson says. "You have to prepare yourself mentally to leave it. It's kind of like leaving home. It is a big part

David Blackwell says he also and the change startling lackwell, 60, a former MIS off cial at Massachusetts Mutual Life Insurance Co., says be sees the people he worked with and the corporate support staff. As a consultant, "I do all the mail myself," he savs.

But one former MIS executive who wishes to remain anony mous, says he found no problem adjusting at all and did not want to have anything to do with "technobabble" after he retired last year at age 58. The closest he ever got to considering em ployment again, he says, was clipping an MIS help-wanted ad out of the Wall Street Journal.

"Who needs the rat race? Af-ter I left, 1 lost 20 pounds, my blood pressure returned to normal and my relationship with my wife improved," he says. And since then, he has taken two cruises, signed up for cooking classes, learned bow to play bridge and completed two Span-ish courses. Next month, the former exec will go to Europe for the south time in his life. "Call me a maverick,

there. Life is not all bits and

Western Digital funding Tandon

tal Corp. and Tandon Corp. reportedly are negotiating an agreement to jointly manufac-ture and market a 3%-in. hard disk drive product for Tandon and OEM microcomputer ven-

Under the terms of the agree ment, Western Digital will lend Tandon some \$12 million to in-crease latter's working capital.

The loan will be secured by sets and technology owned by andon. The agreement would enable both companies to cut costs and offer greater opportunity for product enhancements. "The agreement will allow Western Digital to put together a single process designed to manufacture intelligent Win-

al manager of storage products. The agreement will allow Western Digital to move swiftly into the disk drive market and toward its goal of being a complete OEM systems supplier, according to James Stone of Shearson Lehman Brothers, Inc. "It's a ester drives, which will reduce to and risks in quality and relinituation that is highly beneficial

> Interface Telon is expected to be available later in the third quarter. Pansophic reportedly in-

> tends to offer the link in its next

release of Telon, scheduled for

By linking Casepac with Intel-agen, On-Line Software says it

setting and report generation

that occurs when using front-end design tools and application code

"Data Base Newsletter," ques-tioned the need for mainframe-based CASE products, saying most users are looking for per-

sonal computer-based bit-mapped graphics and main-frame-like repositories for

designs and dictionaries. "I don't think anyone would argue the ad-

vantages of the PC unless they were entrenched in the main-frame mind-set and have blind-ers on, "be said. Shaku Atre, president of Atre International Consultants, Inc. in Rye, N.Y., said Casepac's

strength is its data dictionary, which facilitates the design of

D82 applications. Even though it is called a CASE tool, the prod-

ages of the PC unless they

nerators separately. Ronald G. Ross, editor of the

pes to eliminate much of the dundancy in data specification

Howard Sorgen, president of

water pipe cracked above company heads ter [CW, Aug. 3]. The bill covers the reph Bld manframes and reportedly includes days of labor. The two insurers facing

NE

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in ASS7 or, perhaps, a 9/1100° On Sept. 2, Unioyalli reportedly amounce a mainframe product that is more drown of marty-level users. The product will be conclide with old Burroughs systems, a source close to the mapper said Unity-Cazirman W. Michael Blimmenhalt will reside at the proceeding which. Unioya says, is to "cole-case the levith of a user commention content."

as Grade A. The U.S. Department of Justice put its ump of approving to Computer Associate's acquisition of tool last week. The final purchase price was set at \$800 fices. No sensouscenerus about potential operations and page were made heat week. Computer Associates Chiri-vo Charles Wang and Provident Asstrany Wang will most blood executives in operating twelsh to means the week of the computer of the computer of the computer to Uccel executives in operating twelsh to means the means of the computer of the computer of the providence of the computer of the Uccel executives in operating twelsh to mean the providence of the computer of the

All DEC's east. DEC is expected to round one in VT300 line Testing by a generating the VT300 test terrised in the Testing by a generating the VT300 test terrised in contrast to the various the proposed test of the manachemen VT330 and color VT340 test and graphic testing the various VT330 and color VT340 test and graphic terrisists. This is the leaguest survivale lattice to resource wratter quipped. The new unit should cost a little less than the 978 VT300 are with the view of view of the view

On the warpath, again. Although AT&T has been existing back its company to balons below, bold for the belowing back its company to balons below, bold for the belowing back its company to be a subspection of the containing between eight and 16 of its WESS000 species 32-bit microprocessor chaps next month. One source says these waysten may replace many of AT&T's existing and "juncerally uninteresting" 382 systems, which have not fared very well in the commercial sum.

niew freedom fighters. A cabal of "major computer communications companies" secretly working on an al-ste network management standard to IBM's condicions, iew, is reportedly leaded by (who ole?) ATAT. The one are concerned that IBM has already gained consid-ted the concerned that IBM has already gained consid-ted the concerned that IBM has already gained consid-ted the concerned that IBM has already gained considmours are concerned that IBM has already gained consi-lable industry support for Netview/PC as a common into-ce for sending alerts and other data to the host-based N-rw. The group may come out into the open soon, effect aggressive action quickly to combat the IBM inti-re through a pretty powerful development effort," may obserted for Threader, as admitted member of the action obserted for Threader.

behind Curtain No. 1 . . . A well-known em consultant says DBC's to-be-amount. If will be known as the Microvax 3000 wh to Decworld next mooth. The 2- to 3-mill er-accord system will offer better pricely as prefecessor, the Microvax II, which will morter the analyst modifier.

the grass isn't always greener. The proposed acquis-te of Taligrass Technologies by CMS Enhancements has lest through, according to holts companies. In a letter of test signed July 7, CMS said it plasmed to acquire Tall-am for an undiscioned amount of stock and cash. But has a CMS and the contract of the contract of the contract of the CMS and the contract of th

Eupo a Postacript Inser printer design the likes of AST Research's Turbo tes or AS1 sections are set of the printer uses the actual Adobe as Postacript-licensed driver or if the printer is only ript compatible. Meanwhile, Adobe is apparently no ed at the increasing number of Por

CASE

ely to address the need for a DB2 dictionary. IBM has yet to provide a dictionary se management system. The \$200,000 Casepac fea-

tures mainframe-based graphics using IBM 3270 terminals, ical Data Display Manager and ISPF and an integrated data mation collected during the derelopment cycle to be shared by velopers and data administra-

On-Line Software officials said the mainframe orientation nares data consistency. The CASE features can be sed to create data flow dis-

grams and entity models from which data can be mapped into the Casepac dictionary and val-dated. The same dictionary can then be used to support the fin-ished application.

The Casepac dictionary sup-erts IBM's Data Definition Language, can generate tables based on dictionary entries and can create indexes. The compa-ny said the dictionary can also be populated from existing IBM IMS Program Specification Blocks (PSB), Cobol data division statements and DB2 catalogs.

The Casepac dictionary does ess a major shortcoming of IBM's data dictionary up-proach — the lack of referential integrity — but an On-Line Software spokesman claimed refer-

IBM's only approach to a DB2 data dictionary is a product that

can be used to handle physical DB2 data base design [CW, May 25]. IBM has called this dictionary an interim solution while the company works on a real data dictionary for DB2, a devel-opment that is at least three

On-Line Software, would not commit to a shipping date for the Casepac was originally devel-oped for Fireman's Fund Insur-ance Co. in San Francisco, which was seeking an integrated data Intelagen-Casepac interface but said it would be available before XL/Interface Telon. dictionary to replace six incom-patible data dictionaries. The in-

surer is using Casepac because of DB2's data dictionary shortcomings, according to Ronald Voell, Casepac project director at Fireman's Fund.

red of waiting "We can't wait anymore for IBM." Voell raid. "Two hundred

pared with the productivity that comes from this product."

Voell said his firm expects to use the product beginning next month as its primary means to develop DBZ applications. In its three beta-test projects, Fire-man's Fund is using Casepac to develop a data archiving facility and an automated electronic

forms-generation facility and to build a large data base for its commercial lines of business. On-Line Software is also orking with Tota to develop a working with Tata to develop a Casepac interface for its recent-by unveiled application genera-tor, called Inteligen. The link would position Casepac and In-telagen as a mainframe-based al-ternative to Excelerator, which can be linked to Pansophic Sys-tems, Inc.'s Telon application

nerator via a recently terface (CW, Aug. 10)

Index

is called a CASE tool, the prod-uct still needs some work as a full-fledged application design aid, she added. Although targeted primarily at DB2 users in IBM MVS shops, Casegoc can also be used to develop applications to run under IMS or IBM's VSAM, Tata and On-Line Software said. Technology's XL/

Consideration of the Considera





el.



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